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Evaluating the School Performance of Elementary and Middle School Children of Incarcerated Parents

A dissertation

presented to

the faculty of the Department of Community Health

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Public Health

by

Melissa F. Neal, MPH

December 2009

Dr. Rob Pack, Chair

Dr. Randolph Wykoff

Dr. Tim Aldrich

Keywords: Education, Incarceration, Vulnerable Children, At-risk Students, Incarcerated Parents,

Tennessee Comprehensive Achievement Program (TCAP), Poverty

ABSTRACT

Evaluating the School Performance of Elementary and Middle School Children of Incarcerated Parents

by

Melissa F. Neal, MPH

Children of incarcerated parents are at significantly increased risk of negative long-term outcomes. With about 1% of the adult population incarcerated, the United States has millions of children at risk for these negative outcomes. Research on this population is increasing; however, it is still unclear whether children of incarcerated parents are at an increased risk for poor school performance as a specific result of parental incarceration above that associated with their social and economic status. Because parental incarceration may result in a variety of outcomes that can negatively impact school performance including school mobility, prolonged exposure to stress, and insufficient adult support, it is likely that parental incarceration is an independent risk factor for poor school performance. This study evaluated the impact of parental incarceration on children's school performance. Analyses revealed a trend in lower test scores for children with incarcerated parents when compared with children in single-parent households and of similar socioeconomic status. Children with incarcerated parents were also 3.8 times more likely to be raised by a caregiver with less than a high school education. Finally, within a population of low SES, poverty still significantly predicted lower test scores along with caregiver education level and school mobility. The findings of this study should be useful in helping schools, communities, and service organizations more accurately identify high risk students and formulate effective intervention programs for these students. Finally, this study further informs an understanding of the societal impact of adult incarceration.

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“None of us is as smart as all of us.” Ken Blanchard

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CHAPTER 1

INTRODUCTION

Background of the Study

Children of incarcerated parents are perhaps the greatest casualty of the War against Drugs in the United States over the past 2 decades (Ambrosio & Schiraldi, 1997; Arditti & McClintock, 2001; Reed & Reed, 1997). The emphasis placed on stringent punitive measures by policymakers and politicians has had an unanticipated effect on U.S. prison populations, crime, communities, families, and children (Reed & Reed, 1997). From the early 1980s until 2006, the U.S. prison population grew 360% (U.S. Bureau of Justice Statistics [BJS], 2007); today, 1 in every 99 U.S. residents is incarcerated in prison or in jail (Warren, 2008). Accordingly, the number of minor children with a mother or father in prison has increased by 131% and 77%, respectively, so that 1,706,600 children had a parent in a state or federal prison in 2007 (Glaze & Maruschak, 2008). Anecdotal and, increasingly, empirical evidence shows these children to be vulnerable to a number of risks due specifically to parental incarceration including parental separation and interrupted child development (Arditti, Lambert-Shute, & Joest, 2003; Gabel, 1992; Johnston, 1995; Thompson, 2008), trauma (Arditti et al., 2003; Johnston, 1995), poor emotional health (Dalley, 2002; Thompson, 2008) including posttraumatic stress disorders (Jose-Kampfner, 1995), low self-esteem (Clear, Rose, & Ryder, 2001), and withdrawal (Dalley, 2002; Fritsch & Burkhead, 1981; Lowenstein, 1986; Murray & Farrington, 2005); adverse behaviors, such as aggression (Fritsch & Burkhead, 1981; Huebner & Gustafson, 2007; Johnston & Carlin, 1996; Lowenstein, 1986), regression (Arditti et al., 2003), and delinquency (Fritsch & Burkhead, 1981; Lowenstein, 1986; Murray & Farrington, 2005); stigmatization (Clear et al., 2001; Huebner & Gustafson, 2007), and financial hardships (Arditti et al., 2003; Clear et al., 2001; Johnson & Carlin, 1996).

Due to lack of research, it is unclear whether children of incarcerated parents are at a specific risk for poor school performance beyond the risks already associated with their economic and social conditions. Children of incarcerated parents are vulnerable to a number of issues that increase their risk for poor academic performance including school mobility (Murray, Janson, & Farrington, 2007), truancy (Fritsch & Burkhead, 1981; Lowenstein, 1986), and insufficient adult support (Johnston & Carlin, 1996; Reed & Reed, 1997). Furthermore, evidence suggests that children of incarcerated parents may be more likely to experience emotional disturbances (Thompson, 2008) and exhibit inappropriate stress responses (Johnston, 1995; Arditti et al., 2003) that can impact cognitive development and, ultimately, school performance (McEwen, 1999). Furthermore, children experiencing unhealthy stress responses during early childhood may later display more extreme responses to less major stressors, which could affect classroom interactions (National Scientific Council on the Developing Child [NSCDC], 2005).

An already vulnerable population is put at even greater disadvantage if a beneficial educational experience is not possible. A connection between poor school performance and subsequent delinquency has long been established (Farrington, 1987; Henggeler, 1989). Particularly, early negative educational experiences are associated with juvenile delinquency (Loeber & Farrington, 1998). Various indicators including poor school attendance, poor academic performance, weak school attachment, and the grade level attained have all been related to subsequent arrest rates and incarceration (Lochner, 2004; Pettit & Western, 2004; Sinclair, Christenson & Thurlow, 2005; Western, Kleykamp, & Rosenfeld, 2006). Identifying parental incarceration as an independent risk factor for poor school performance leads to a greater understanding of parental incarceration as a risk factor for adverse outcomes in offspring. Continual analysis of the educational performance of this population of children could enable us to better understand the systemic interplay among our institutions and further inform national policies on how to reduce the challenges associated with parental incarceration.

The War on Poverty of the 1960s fostered a rehabilitative approach in national corrections policies; however, as the United States began its War on Drugs in the early 1980s, the focus of corrections shifted to broad and punitive incarceration and sentencing policies (Thompson, 2008). With attention primarily focused on the incarceration of criminals, the populations of state and federal prisons increased by 360% from 139 out of 100,000 American residents in the early 1980s to 501 per 100,000 residents in 2006 (BJS, 2007). When accounting for imprisonment in both jails and prisons, 2.26 million residents were incarcerated at the end of 2006 (Sabol, 2007). This translates into an incarceration rate of 751 out of every 100,000 U.S. residents (Sabol, 2007). At the beginning of 2008, for every 99.1 residents in the United States, one person was in custody in a jail or a state or federal prison (Warren, 2008). One in every 31 residents was under some form of correctional supervision (Warren, 2009).

Difficult circumstances are often present before the parent's arrest and incarceration; however, it is proposed that parental incarceration exacerbates the problems already present before the incarceration even if the parent did not live with the child (Hagan & Dinovitzer, 1999). Parental incarceration is now considered a disruptive, traumatic life event that has been associated with financial strain; poor emotional, behavioral, and mental health; and disturbed social development (Arditti et al., 2003; Hagan & Dinovitzer, 1999; Johnson & Waldfogel, 2002; Phillips, 2006). Findings also support the idea that children react to the loss of a parent to incarceration differently from the loss of a parent for other reasons (Murray & Farrington, 2005) particularly due to the "demoralization and stigma attached to it" (Lowenstein, 1986).

Twenty years into the War against Drugs, the implications of penal policies mandating and facilitating the mass incarceration of millions of criminal yet mostly nonviolent offenders are finally being recognized. Hagan and Dinovitzer suggest that, "the decision to so extensively invest in and rely

on imprisonment as a solution to crime problems has unnoticed costs and consequences that we are only beginning to understand” (1999). Policymakers did not consider the potential impact of these policies on the children, families, and communities of prisoners (Arditti & McClintock, 2001) nor did they anticipate the needs surrounding the return of the offenders back into the communities after completing their sentences (Thompson, 2008). We are now seeing the fallout of these policies, procedures, and lack thereof (Cunningham, 2001).

Purpose of Study

Understanding the school performance of children of incarcerated parents is essential in determining how society can help ameliorate the negative consequences of parental incarceration. A clear association has not been previously established due to an underreporting of problems often attributed to the “invisible” status of this population. Yet, associating parental incarceration and subsequent school performance enables society to significantly reduce negative outcomes through alterations of policies and the development of programs to keep these children in school. This study was grounded in an ecological approach as the educational performance of children is analyzed in light of the influence of individuals, institutions, and policies that are seen to extend their influence and directly impact these children. This study identifies a crucial portal for intervention in the lives of these children and supports providing the information needed for teachers and schools to create optimal learning environments, not only for children of incarcerated parents but for all students inside the classroom. Findings from this study should be applied in influencing policies and procedures among organizational systems to better meet the needs of children and families of the incarcerated.

This study evaluated the impact of parental incarceration on elementary and middle school performance. The individual school performance of children with incarcerated parents was compared to those from similar social and economic conditions who do not have incarcerated parents with

attempts made to assess school performance measures over several years. Additionally, data for various independent variables existing in the lives of children with incarcerated parents were analyzed for their potential role in affecting the children's academic performance either by acting independently or synergistically with the parent's incarceration. Hence, the purpose of this study is to better inform the public debate about the risks and benefits to children resulting from the incarceration of parents.

Theoretical Framework

A social ecological perspective was employed in attempting to understand the potential impact of parental incarceration on the academic performance of children. A thorough analysis of the issue at hand should consider not only the criminal justice and educational systems but children's services, community organizations, and corrections systems as well. Due to the multisystemic nature of this issue, an ecological approach was useful in discerning the intricacies of the problem.

Bronfenbrenner's Ecological Systems Theory (EST) (1979; Bronfenbrenner & Morris, 1998) provides an ideal framework for analysis of this problem. This theory falls into the category of a field-theoretical model, which takes into consideration development processes, the environment, and outcomes (Johnson, 2008). The model is also called the Bioecological Model to emphasize the biological aspects of growth within the context of various systems in the child's environment (Bronfenbrenner, 2005; Bronfenbrenner & Morris, 2006). This approach theorizes that five levels of systems interact in producing developmental outcomes in children four of which are composed of relationships with individuals and institutions with the last system consisting of time. The utility of this theory lies in its emphasis on the interaction between many systems as a major factor in child development and well-being. Furthermore, the unique interaction observed between the corrections system and children is better illustrated through the EST model than other more narrowly focused models such as social address or personal attribute models. Social ecological approaches, as delineated by Bronfenbrenner

among others, have been viewed as possibly intimidating to researchers with the many settings and systems to be considered (Sameroff, Seifer, Baldwin, & Baldwin, 1993). Yet, understanding the systemic impact of incarceration on society is crucial in discerning how policies and interventions extend across multiple societal levels to affect children, families, communities, states, and countries.

Bronfenbrenner's Ecological Systems Theory

Bronfenbrenner's ecological systems theory comprises of the following five levels of systemic interaction beginning with the smallest unit of interaction and expanding to the broadest: the microsystem, the mesosystem, the exosystem, the macrosystem, and the chronosystem. The most intimate level of interaction is seen at the microsystem level. At this level information about a child's bidirectional relationships with individuals in closest proximity is examined. These relationships are usually with the child's parent(s), daycare workers, and teachers among others. Information about the quality of these interactions can be included to provide a thorough understanding of the impact of these relationships on the child's development.

At the mesosystem level bidirectional relationships between the various microsystems that affect the child are assessed. Generally, the various entities interacting directly with the child also have a relationship in order to provide adequate, comprehensive care for the child such as the parents or caregivers with the teachers, parents with caregivers, parents or caregivers with daycare workers, and so forth. These interactions (or lack of interaction) affect the child's overall environment. They can potentially impact the child's relationships on the microsystem level.

An overall social framework for a child is described at the exosystem level. Typically, a child is not seen to interact directly with the systems or components on this level; rather, the various systems exert a unidirectional influence on the child through his or her relationships at the microsystem level.

Parents' workplaces and resources at the community level are examples of the entities that function on the exosystem level.

The broadest level of interaction is that of the macrosystem. This dimension consists of the cultural attitudes, expectations, and customs as well as laws and policies that pervade a society and eventually impact child's environment and development through a unidirectional relationship. The influence of the macrosystem extends over the exosystem, mesosystem, and microsystem as well.

The final level of this theoretical framework is the chronosystem that allows an account for the passage of time on a child's development. This level includes information regarding changes occurring to the child through the progression of life as well as the changes occurring within the child as he or she ages and matures.

Ecological Systems Theory and Children of Incarcerated Parents

The following is a description of how the Ecological Systems model can be used to direct research on the impact of parental incarceration and their offspring. An understanding of the household conditions, relationship issues, and other factors as evidenced through observations and the current literature has been applied within the various systems of the model.

In studying children of incarcerated parents microsystemic interactions of the child with the child's caregiver, parent, teacher or key school personnel, mentors, and other family members should be considered in understanding parental incarceration and children's educational outcomes. For example, in the lives of children of incarcerated parents we may observe strained relationships between the child and his or her caregiver. This strain could be attributed to a caregiver's financial constraints due to the parent's incarceration, a divorce resulting from a lengthy sentence, or a lack of honesty about the parent's incarceration and consequential mistrust issues among many possible scenarios. The stress of a

conflicted relationship between a child and caregiver could exacerbate the child's reaction to his or her parent's incarceration, thus possibly increasing a negative behavioral response or worsening school performance. However, additional support from other adults aside from the child's caregiver such as a mentor could potentially buffer a child from the full effect of having a parent in prison. Hence, a careful assessment of relationships within each child's microsystem is necessary for a complete understanding of the impact of parental incarceration on the school performance of children.

At the mesosystemic level the relationships between the caregivers and schools, parents and schools, caregivers and mentors, and mentors and schools should be reviewed. It is possible that due to job restraints, lack of transportation, or low education the caregiver may not have a strong or positive relationship established with the school. This could potentially affect the teacher's relationships with the child as well as the caregiver's ability to adequately support the child's academic endeavors within the home. Positive or negative relationships between mentors and caregivers should be noted for potential encouragement or stress on the child. Finally, as stated previously, the relationship between the child's caregiver and the incarcerated parent could be strained due to various factors and eventually affect the child.

Although the exosystem does not include the child, it is considered a crucial component in understanding the impact of parental incarceration on a child. At this level, organizations, institutions, and social networks are defined for their role in the problem. Not only would institutions negatively contribute to the problem be identified, but breakdowns in communication among these institutions could exacerbate problems as well. Such gaps are seen to contribute to a lapse in service delivery as well as to an absence of a social network of support for these vulnerable families. The exosystem would include correctional institutions, the criminal justice system, mass media, welfare services, Department of Children Services, and school boards. As a parent is housed in a correctional facility, the distance of

the incarcerated parent from the child, visitation requirements encouraging or limiting visitation with the parent, high fees and limitations associated with communication by phone, and limitations of the parent to interact with the child on significant holidays and birthdays are means by which the child's wellbeing and development may be directly affected by factors within the exosystem.

The emphasis a society places on protecting children and enabling healthy development plays a role in ensuring the wellbeing of children of incarcerated parents. Understanding cultural expectations and norms at the macrosystemic level that concern incarcerated parents and their families is an important part of this study. An overview of the historical progression of the United States in its attempts to deal with crime and poverty sheds light on current attitudes regarding the correction of offenders and criminal justice. Since the start of the "War on Drugs" in the 1980s, the United States has accepted and enforced punitive incarceration policies with little to no consideration of family and children of prisoners (Arditti & McClintock, 2001). Additionally, the lack of full employment opportunities to former inmates exacerbates the long-term financial impact of incarceration and may lead to increased recidivism (Holzer, Raphael, & Stoll, 2003; Weiman, 2007). These scenarios are the reality of today's society; however, issues related to incarceration and its antecedents are gaining attention as an imminent problem (Thompson, 2008). A number of federal, state, and county policies currently in effect regarding incarceration, arrest procedures, and visitation reach across the levels of the ecosystem and affect children.

The chronosystem guides one in understanding how the timing of events may lead to different impacts on children of incarcerated parents. The age at when parental incarceration occurs could have varying impacts on child development. For instance, incarceration occurring during the 1st year of life versus the 14th year could potentially have less of an impact on a child's academic performance.

Further differences may be noted in children with parents serving a lifelong sentence versus those with parents reentering correctional facilities at multiple points through their childhood.

Research Questions

This project sought to answer the question of whether or not parental incarceration is correlated with the educational performance of children in elementary and middle school. A variety of information not often available for this population such as gender, sibling groups, race, caregiver education levels, extended family support, income, and extracurricular activities among others was gathered with the intention of exerting greater control over those variables aside from parental incarceration that could impact educational performance. The research questions for this study were as follows:

1. Will children of incarcerated parents show an overall significantly poorer level of school performance as compared to the comparison group?
2. Will children show significant positive or negative change in school performance after the onset of parental incarceration?
3. What factors present in the lives of children with incarcerated parents (particularly parental incarceration) significantly predict poorer individual school performance during elementary and middle school years?

Definitions of Terms

Amachi – a mentoring program model that involves matching children of prisoners with local caring adults involved in the faith community and supports a weekly mentoring relationship (Public/Private Ventures, n.d.).

At-risk – as applied to youth, “youth who are most likely to experience school failure, teen pregnancy, or some other negative developmental outcome” (Winfield, 1995).

Absenteeism – failure to appear for scheduled class sessions

Truancy – regular, unexcused absences (Child Trends, 2003)

Caregiver – an individual responsible for the care of a child affected by parental incarceration. These individuals may have full custody, Power of Attorney, or a court-order. Other caregivers care for children through informal, unwritten agreements. The caregiver may be a parent, relative, foster parent, or other person (Oregon Senate Bill 133, 2002)

Criminal Justice – “rights-respecting treatment that is deserved by virtue of criminal conduct as judged by the rule of law” (Dilulio et al., 1993).

Criminal Justice System – The network of courts and tribunals that deal with criminal law and its enforcement (ABA, 2006).

Criminality – criminal practice or act

Correctional Institutions – any facilities for the confinement and correction of convicted adults or juveniles adjudicated delinquent or in need of supervision and for the detention of those adults and juveniles accused of a crime and awaiting trial or hearing (BJS, 2008).

Corrections – functions of government involving the confinement and rehabilitation of adults and juveniles convicted of offenses against the law and the confinement of persons suspected of a crime and awaiting adjudication (BJS, 2008).

GPA – Grade Point Average

IEP – Individualized Education Program, used to guide the educational progress of children with disabilities as identified through a formal evaluation process (US Dept. of Education, 2000)

Incarceration – “placement and restricted supervision of a convicted offender in an institution, such as a prison” (Alberta Justice, n.d.).

Inmate – an incarcerated individual in a federal or state prison or in a local jail (Oregon Senate Bill 133, 2002)

Jail – a county or city operated facility housing inmates serving sentences of 1 year or less (Oregon Senate Bill 133, 2002); some states contract with local jails to house state prisoners who are serving longer sentences.

Juvenile Delinquency – “an antisocial misdeed in violation of the law by a minor” (Princeton University, 2006).

Juvenile Justice System – the network of courts and correctional institutions for youth that usually emphasize the treatment and rehabilitation of offenders under the age of 18 years

Parole – “a period of conditional community supervision following a prison term. If the conditions of supervision are violated, the parolee can be returned to prison to serve any of the remaining portion of the sentence” (BJS, 2002).

Probation – Sentence ordered by the court allowing an offender to remain in the community with supervision and guidance of a Probation or Parole Officer under such conditions as the court may impose (N.H. Dept. of Corrections, n.d.)

Risk Factor – “a variable that predicts an increased probability of later offending” (as cited by Farrington & Welsh, 2007).

School Mobility – “a change in the educational setting of students” (Mehana, 2004)

TCAP – Tennessee Comprehensive Achievement Program administered to students in grades 3 through 8 each year in the state of Tennessee

Toxic Stress – “strong, frequent, or prolonged activation of the body’s stress management system”
(NSCDC,2005)

Warden – the head administrator of a prison or jail

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

A variety of information was assessed in order to thoroughly explore the potential link between parental incarceration and a child's school performance. First, an examination of factors related to the parent and his or her incarceration was provided. Second, potential barriers to educational performance related to factors stemming from parental incarceration were described. Finally, the means by which negative school performance could be linked to children's dropout rates as well as eventual involvement in juvenile or criminal justice were presented. This review ended on the note of the financial implications of this issue.

The body of literature on parental incarceration is growing with anecdotal information being slowly reinforced and explained by more rigorous experimental studies using long-term cohort studies. In investigating the problem of parental incarceration, however, a variety of information is emerging as the problem is studied from different approaches.

Literature can be found investigating different perspectives of the problem as follows: (a) current adult incarceration, criminality, rehabilitation, and crime prevention; (b) the adult offspring of prisoners; (c) young children of prisoners; and (d) juvenile delinquency and delinquency prevention. A definite overlap exists in this information as many juvenile delinquents are the children of prisoners who are following in their parents' footsteps early in life; however, it is important to differentiate between research on children at-risk in general and children with the added risks of parental criminality and incarceration.

“Disentangling” the Issue

A limited number of studies have provided empirical evidence about the impact of parental incarceration on children. Many studies advocating for greater support of children of incarcerated parents are based on self-report or anecdotal data, use weak methodology, and do not fully account for the limitations imposed by the numerous factors accompanying parental incarceration that negatively impact child development (Johnston, 2006; Phillips, 2006). Differences in the definition of parental incarceration complicates research with a lack of agreement on whether or not to include parents with one night or one week stays in jail, as well as, those under community based correctional constraints. However, the evidence presented does warrant further analyses in order to fully understand the implications of current policy and to accurately advocate for this population of children. With this understanding, researchers have recently begun studying children of prisoners with more rigorous methodology and clearer acknowledgements of their limitations.

Parental Incarceration and Parental Criminality

One important differentiation to acknowledge is the impact of parental incarceration versus parental criminality on offspring outcomes. Determining if and how these factors affect offspring provides distinct and differing direction in research and intervention efforts. An analysis of prospective, longitudinal data by Murray and Farrington has revealed that “parental incarceration predicted antisocial behavior and delinquency among working-class males in London, even after controlling for parental criminality” (Murray, Janson, & Farrington, 2007, p. 133). They found that 48% of boys who had a parent incarcerated before they reached age 10 were convicted of a crime as adults. However, of the comparison group who experienced separation from a parent for reasons other than incarceration, only 35% were convicted of a crime as adults.

Further research by Murray et al. (2007) revealed that the impact of parental incarceration

varied among different countries and different policies. In Sweden, relationships were found between parental incarceration and crime in offspring; however, this relationship was eclipsed by the confounding of parental criminality. Yet, in England, studies of a similar cohort showed a strong relationship between parental incarceration and crime in offspring despite parental criminality. Murray et al. remark on the differences among policies regarding incarceration, visitation, and treatment of juvenile delinquency between the two countries which could help explain the differing impact of parental incarceration on the youth of both countries. The United States is believed to more closely resemble Great Britain in its social environment and policies; hence, it is expected that the U.S. would show similar results to those found in Great Britain should the study be replicated using data of American children. These studies reveal that the incidence of parental incarceration leads to adverse outcomes in offspring and support further investigation of parental incarceration regarding its impact on specific outcomes, such as academic performance.

Parental Incarceration and Mental or Behavioral Health

In considering how parental incarceration may affect the mental health of a child, it is first important to recognize the high number of individuals with mental health issues currently involved in the corrections system. James and Glaze (2006) found that in 2004 nearly half of all individuals behind bars reported a mental health problem that was substantiated as a clinically diagnosed issue or a report of diagnosable symptoms. The breakdown of prisoners reporting such issues was as follows: 56% of state prisoners, 45% of federal prisoners, and 64% of jailed offenders. These mental health issues caused inmates to be less likely to hold legitimate employment, more likely to be homeless, and more likely to be substance abusers prior to their incarceration. When specifically considering parents in the corrections system, 57% of parents as state inmates and 43% of parents as federal inmates reported mental health problems in 2004 (Glaze & Maruschak, 2008). The high rate of incarcerated individuals

with mental health issues highlights the need for directed support for better mental health among at-risk children, with a priority directed toward children of incarcerated parents who may have both the genetic and environmental risks associated with poor mental health.

Parental incarceration has been associated with various mental, emotional, and behavioral health issues. After the incarceration of a parent, children have displayed reactions such as aggression, social withdrawal, depression, sleeping disorders, and lack of concentration many of which are symptoms of Posttraumatic Stress disorder (Jose-Kampfner, 1995). Symptoms are worsened if the child actually witnesses the parent's arrest. The emotional impact of the parent's incarceration could lead to detrimental outcomes. Maschi (2006) found that boys with anger problems were significantly more likely to engage in property and violent crimes. Depression and its symptoms including irritability and hopelessness are linked to Antisocial Personality Disorder, which is associated with antisocial and criminal behaviors, drug abuse, unemployment, and homelessness (as cited by Washburn et al., 2007). Through use of a standardized assessment, Stanton (1980) observed a negative association between self-esteem and the behavior of children with imprisoned mothers as reported by their teachers based on classroom observations and the children's work.

Aside from a parent's mental status or a child's genetic predisposition to a mental disorder, developing children's brains are vulnerable to the harmful effects of toxins within physical and social environments. The social environment of many children could possibly translate to harmful physical toxins due to toxic stress levels in their lives. Experts in the field of child development have defined toxic stress as "strong, frequent or prolonged activation of the body's stress management system. Stressful events that are chronic, uncontrollable, and/or experienced without the child having access to support from caring adults tend to provide these types of toxic stress responses" (NSCDC, 2005, p. 1). Very often, incidences of parental incarceration occur to children having all three qualifications

described – the incarceration is often chronic event due to a lengthy sentence or several subsequent sentences, the incarceration of the parent is completely out of the child’s control, and many children experience the incarceration (some may experience the arrest, as well) without the support of caring adults. As a result, parental incarceration may qualify as an event likely to provoke toxic stress levels in children.

Societal Implications

Parental incarceration and community impacts. With an approach grounded in social capital theory, Wright, Cullen, and Miller (2001) gathered a systematic understanding of how both social and family capital play a role in preventing adverse outcomes. Due to its relational nature, social capacity is a dynamic variable driving children along a continuum between delinquency and healthy social interactions. The cultivation of family social capital requires an investment of time by parents, an establishment of emotional bonds, and communication of boundaries and expectations. These researchers found that family capital significantly and positively impacted the moral beliefs, time invested in study, and grade point averages while negatively impacting involvement with delinquent peers. This positive impact exceeded or at least paralleled the impact of delinquency on these same measures. The positive impacts were found to extend even over a span of 6 years, affirming the idea that social capital is cumulative in nature – children build on positive interactions and relationships while avoiding threats to these benefits. The benefits of family capital were seen to overcome the negative impacts of prior delinquency. Long-term outcomes showed a positive impact of family capital on friendships with offenders, drug use, exercise, health, and commitment to employment. Parents involved in criminal activity or incarceration as well as burdened caregivers may not be able to provide these building blocks of social capital within their children; hence, placing these children at greater risk for negative outcomes including delinquency and criminal behavior later in life.

Rose and Clear (1998) used another social ecology approach to research the interplay among various types of social capital in maintaining social control. Testing the framework of the social disorganization theory, Rose and Clear investigated the reliance or overreliance on formal, public controls, specifically incarceration, and a neighborhood's ability to self-regulate. In this review, an increase of formal controls such as policing and incarceration parallels a decline in "primary" or "parochial" control that involves parents and neighbors taking an active role in the atmosphere, activities, and dynamics of their community. Incarceration is seen to damage the community's self-regulation as it removes in mass quantities individuals who are players in the community system such as fathers, revenue generators, etc. Rose and Clear postulated that the misuse or overuse of certain forms of social control hinder more natural forms of social control leading to disorganization as well as the potential for delinquency and criminal behavior.

Much research is needed to further understand the broad impact of incarceration on communities. Current information is sparse and contradictory. Lynch and Sabol (2004) attest to the need for research. They found that incarceration can negatively impact community solidarity; however, whether or not increases in the incarceration rate leads to additional crime is not clear.

Parental incarceration and family impacts. Evidence from anecdotal and scientific research shows that parental incarceration leads to many serious complications within families. Typically, these families experience a decrease in socioeconomic conditions, increased mobility among households and schools, decreased social network support, stigmatization, breakdown in the parent-child relationship, stressors associated with caregivers, complications associated with visitation of parent in the prison, and insufficient communication with the child experiencing the loss of the parent (Murray et al., 2007).

An understudied effect of parental incarceration is the financial implications for the family left behind. A nationwide assessment of offenders by Glaze and Maruschak (2008) revealed that 54% of

state inmates self-reported being a primary financial provider. This issue is complicated with most families living in poverty or near poverty prior to the parent's incarceration. If extended family takes over the care of offender's children, there is often little financial assistance for those families. The family on the outside must solve problems of how to afford phone contact (through costly phone call plans), visitation (transportation costs and motel stays), as well as providing for the child. Visitation is complicated by the fact that most parents are housed hundreds of miles from their children. Furthermore, financial considerations have not been made for children's services identifying children in need of supportive services (Johnson & Waldfogel, 2002; Myers, Smarsh, Amlund-Hagen, & Kennon, 1999). Additional financial strains are evident through the fact that an estimated one fourth of incarcerated parents owe child support and incur much more child-support debt while in prison (Hirsch, 2002).

Of particular concern is the loss of extended family and community support due to the stigma associated with the situation (Fritsch & Burkhead, 1981). Although social perceptions surrounding incarceration are changing, particularly in certain ethnic groups, families still report shame and a stigmatization associated with the incarceration of a family member (Gabel, 1992; Myers et al., 1999). The loss of social support is cited as a main mechanism through which parental incarceration so adversely impacts children (Fritsch & Burkhead, 1981).

It is not always clear whether all of these negative circumstances are due strictly to a parent's incarceration. There is a chance that they may be due to the lifestyle of the parent and have always been present in the family even before his or her incarceration (Hanlon, O'Grady, Bennerr-Sears, & Callaman, 2005). Phillips, Erkanli, Keeler, Costello, and Angold (2006) investigated the role of parental criminal justice involvement as well as parental substance abuse, mental illness, and low education that would expose children to the following family risk factors: family instability, household economic strain,

inadequate care, and family structure. Considering previous research indicating an association between these family risks and a child's involvement with the criminal justice system, tying in the responsibility of criminal justice involvement could bolster the argument that policy changes and additional support are needed for children affected by parental incarceration. Phillips et al. (2006) found a significant relationship between certain parent risks and their children's exposure to family risks such as economic and social instability. These parent risks, especially substance abuse, were significantly related to parental criminal justice involvement. Ultimately, Phillips et al. concluded that parents with criminal justice involvement were significantly more likely to have families with economic and family structure instability.

Parental incarceration and gaps in service delivery. Many factors beyond the actual incarceration of the parent are also believed to contribute to negative outcomes within their families (Johnson & Waldfogel, 2002). A prevailing conception is that incarceration affects only the offender involved; however, due to the multisystemic nature of this activity, the adverse impact spreads beyond the individual to his or her family and the surrounding community (Rossman, 2001). Researchers have acknowledged how families of prisoners are not only impacted by "acts of commission" that are the peremptory institutional procedures that affect these families, but also by a lack of resources and support in the community known as "acts of omission" (Phillips et al., 2006, p. 694). Rossman wrote, "many programs...seek to prevent or mitigate specific, often narrowly-defined problems or behaviors, rather than responding holistically to the needs of individuals" (p. 2). Especially apparent are disparities of disease morbidity and treatment among prisoners and former offenders, and it is possible that the breakdown in systemic interplay and comprehensive service delivery is an important contributor to these disparities that lead to poorer outcomes within the offender's family and community.

Potential Barriers to Positive Educational Performance

A number of connections can be made linking parental incarceration with poor performance by these children at school. Studies have already demonstrated that frequent transfers among schools, emotional disturbances, and other factors related to parental incarceration can impact a child's ability to do well at school with effects potentially leading to the child's failure to complete high school (Mann, 2006; Sinclair et al., 2005; Wagner, 1995).

Previous studies investigating the school performance of children of incarcerated parents often based their findings on self-reported information; only one study using a secondary data source was found. Lowenstein (1986) provided a general assessment of the school performance of children of incarcerated parents using the Children's Adjustment Inventory which included measures to assess the mother's perception of changes in the child's behavior including school performance. Impaired school performance was observed in the study population in the following areas: disciplinary problems, deterioration in school work, aggressive behavior, and truancy. According to the mothers surveyed, paternal incarceration played a substantial role in the decline of performance in these areas.

Sack, Seidler, and Thomas (1976) also report a drop in children's school performance following the incarceration of a parent; however, this drop was seen to be temporary. Once again, the data were based on the self-report of the spouse of the incarcerated parent; only half of the incarcerated parents reported negative school performance. School phobia, an unwillingness to attend school, was observed by spouses among children from 6 to 8 years old. This study reported that a majority of the families under study had to relocate in order to stay close to the incarcerated parent, which means a change in schools could have also caused a temporary dip in academic progress.

Another report by Sack (1977) was based on his observations of male children receiving mental health care services after the incarceration of a father. Sack confirmed a decline in school performance

after a parent's incarceration; however, in one observed situation, a child's academic progress normalized once the child's mother was truthful about the father's imprisonment. Yet, another child observed was subsequently expelled from school in the 1st grade. Sack, again, reported a temporary school phobia in young children based on the data from these observations.

Stanton (1980) gathered school records for an objective measurement of children's school progress currently found in the literature. Stanton compared the academic performance of children with a mother in jail versus children with a mother on probation. She found that 70% of children with a mother in jail were in the bottom third of their class as compared to 17% of children with a mother on probation. Furthermore, only 4% of children with mothers in jail versus 33% of children with a mother on probation placed in the top their class. As indicated by these numbers, children with jailed mothers performed significantly worse academically than children with mothers on probation. This study is ideal in its use of secondary data and objective analysis of the priority population's academic performance; however, its application is limited in that all the children in the study were likely impacted by incarceration (as defined by this study) if the mother was taken in for a detention in jail prior to sentencing. Stanton made no comparisons to children without parents under some form of correctional supervision.

Lack of positive educational experiences. The school is an institution that could potentially serve as a haven for at-risk children against the factors such as family disruptions among others that could adversely affect their futures. Dunham and Alpert (1987) describe the role of schools in enabling children to learn crucial social skills needed for success, to demonstrate their capabilities in attaining knowledge and successfully navigating social situations, and to build a positive reputation among peers. Unfortunately, the helpful benefits of this institution are highly sensitive to the negative impact of certain disruptions that can actually distort the positive into lingering adverse influences. Such

disruptions were defined as the following: suspensions, a lack in “reading ability, early behavioral problems in school, ineffective monitoring and management of students by teachers and school staff, grade retention, and special education placement” (Mann, 2006, p. 156; Mendez, 2003). These experiences may usurp the positive effect of schooling and warp the educational experience so that it actually facilitates school drop-out. For example, the negative experience of out-of-school suspensions in the 6th grade has been linked with poorer high school performance (Mendez, 2003) that could increase the likelihood of high school dropout. Multivariate analyses by Skiba and Rausch (2004) showed that suspensions have a significant negative impact on test scores independent of the race or poverty level of test takers. Myers (2003) suggests that students who are suspended also have attendance problems, thus demonstrating poorer performance on annual exams. The overarching explanation behind many of these facts is that positive early life experiences are connected to improved cognitive and emotional function later in life (Knudsen, Heckman, Cameron, & Shonkoff, 2006). Among students who are unable to achieve positive outcomes in school early in life, it is more likely they will respond by attaining success and affirmation in other roles (Maschi, 2006; Winters, 1997).

Children of incarcerated parents are likely to face greater barriers to achieving educational success that may increase their chances of school drop-out and subsequent entry into the criminal justice system. Children isolated by the stigma of having an incarcerated parent may be unable to achieve status among peers and may resort to other means of attracting attention and developing a network of peers (Hagan & Dinovitzer, 1999). This stigma may also contribute to poor perceptions and lowered expectations of this population among caregivers, teachers, or the criminal justice system (Huebner & Gustafson, 2007). Children of incarcerated parents reacting emotionally or behaviorally (Dalley, 2002; Jose-Kampfner, 1995; Murray, 2007) in the classroom may have teachers or counselors who are unaware of their special needs; hence, their needs may be mismanaged or mishandled by school personnel (Talbert-Johnson, 2004). Children of incarcerated parents may have a caregiver or a

number of caregivers who are unable to provide the support needed for optimal school performance (Bates, Lawrence-Wills, & Hairston, 2003). For example, elderly or working caregivers may be unable to attend parent-teacher conferences. This may inhibit the caregiver's understanding the child's school status and discourage the teacher's investment in the child's academic success (Bates et al., 2003). Finally, these children are considered more likely to engage in risky behaviors such as drug abuse and delinquency (Johnston, 1995) that would also impede academic success.

Emotional and mental stress. Both the emotional and mental health of children of incarcerated parents should be seriously considered when investigating the potential educational impacts of parental incarceration. "It is becoming clear that the more high-risk factors in a child's life, the greater the likelihood that emotional and behavioral disorders will result" (Knitzer, Steinberg, & Fleisch's study, as cited in Wagner, 1995, p. 97). A number of studies indicate that children may show decreased self esteem as well as adverse behavioral or emotional reactions upon the incarceration of a parent or thereafter (Dalley, 2002; Murray, 2007; Stanton, 1980). Jose-Kampfner(1995) suggests that many children show symptoms of posttraumatic stress syndrome after experiencing parental incarceration. However, the impact may not be completely negative. Other studies assessing parental incarceration show positive effects when the incarceration led to an improvement in home security and overall environment (Poehlmann, 2005; Stanton, 1980).

An association between stress and negative developmental outcomes is increasingly confirmed. Investigations of stress response hormone activity such as cortisol and glucocorticoid hormones reveal how an initially protective stress response eventually damages the brain and body after prolonged elevation of hormone levels that may continue even after exposure to the stressor has ceased (McEwen, 2000). A combination of genetics and early childhood experiences are believed to contribute heavily to how an individual responds to stressors throughout life. Adverse impacts on a child may inhibit his or

her ability to generate healthy responses to stressors that could lead to increased brain deterioration, cognitive impairment, and other chronic health problems such as hypertension and heart disease later in life (McEwen, 2000). If children are under the constant stressor of parental incarceration along with all that entails it is possible that they may be unable to produce healthy chemical and behavioral responses to other stressors occurring on a daily basis. This could impact their ability to function in school; it could potentially have a role in the behavioral response of these children to normal, appropriate stressors they face within the school environment.

Wagner (1995) reported on a group of students particularly at risk for failure in school who were diagnosed with Serious Emotional Disturbances (SED). As a result of this diagnosis, some of these children are placed in special education programs. This is intended to assist children in their educational experience but may actually lead to long-term, negative labeling and lowering of expectations (Woodhead, 1988). An investigation of data from the National Longitudinal Transition Study of Special Education Students showed that compared with 24% of average students and 36% of students with other disabilities, 55% of students with an emotional disturbance are school drop-outs (Wagner, 1995). Sinclair et al. (2005) reported that during the 1999-2000 school year among students 14 years old and above with emotional or behavioral disabilities 14,842 or 40% of these students graduated, while 19,032 (51%) dropped out of school; and, according to other studies, these differences are even more pronounced when student performance is broken down by race.

Increased mobility risks. A number of studies have identified an increased mobility of children of incarcerated parents among various households and schools (Murray et al., 2007). The potential of this mobility to impact the school performance of these children is very real especially if mobility occurs during early childhood. A number of studies have established that frequent school mobility is related to lower academic achievement (Demie, 2002; Mehana & Reynolds, 2004; Temple & Reynolds, 1999).

Researchers have estimated that academically mobile students average from 3 months to 1 year behind their peers (Mehana & Reynolds, 2004; Temple & Reynolds, 1999). The literature also suggests significant correlations between school mobility and ethnicity, socioeconomic conditions, language ability, single-parent household, and poor performance prior to school moves (Demie, 2002; Rumberger, 2002; Temple & Reynolds, 1999). It is possible that these factors could interact to exacerbate the negative impact of these factors on academic performance outcomes.

Demie (2002) found significant positive relationships between the amount of time a student spends at one school and his or her academic achievement. However, within a few schools analyzed Demie found the relationship to be reversed – increased mobility was associated with improved performance and suggested that the positive association between mobility and performance could be attributed to efforts by those schools to address the problems precipitating from mobility. This led Demie to assert that her findings be extrapolated and applied carefully.

Barton (2005) found that when controlling for socioeconomic conditions and two-parent household status an additional 9% of variation in high school completion could be predicted based on school mobility in the 6th and 7th grades. This phenomenon has been labeled the *school support hypothesis* by Reynolds (1998) who suggests that school mobility that disturbs involvement in programming could adversely affect the positive benefits of schooling believed to inhibit later delinquency. Studies have also recognized that school mobility during early childhood education years may have a worse impact than mobility in secondary education levels (Mehana & Reynolds, 2004). Mann (2006) recommends efforts to provide greater stability to children experiencing high mobility from school to school as well as educational experiences adapted for students with emotional and behavioral disorders.

Engec (2006) investigated student mobility in its association with poverty to better understand its possible impact on school performance. This study noted that not all students living in poverty necessarily perform poorly in school; however, there is a large population of students living under the poverty level that often moves from school to school. Engec observed that there may be insufficient support for these students who may be experiencing “a lack of continuity of lesson content, disruptions in social ties, and feelings of alienation” (p. 168). This is compounded with the burden of further adjustments if the child moves to new households as well. A comparison of a state norm-referenced test (the Iowa Test of Basic Skills) scores showed significantly better performance among nonmobile students; furthermore, the scores of students moving once during the school year were significantly better than those of students moving two or more times during the school year even when controlling for ethnicity and grade level. Engec also found that suspensions increased as students changed schools more often. This could be a key inhibiting factor in long-term academic success when considering the frequent mobility of this most at-risk population of children.

Mehana and Reynolds (2004) describe three potential reasons for the adverse impact of mobility on school performance as follows: the disruption in schooling instruction, disruptions in relationships among peers and teachers, and the possible presence of lower socioeconomic conditions among mobile families.

Educational Performance and Criminal Justice Involvement

School performance has been documented in its association with later criminal activity. Bell (1993) wrote that prisoners are the results of an educational system that neglected to shape them into contributing citizens, precipitating their descent into criminal activity. Some researchers have gone so far to specify that “literacy deficits are a major cause of crime” (Vacca, 2008b, p. 1056). This has been explained through a number of means. Maschi (2006) describes how an inability to reach school-related

“positively valued goals” is associated with delinquent acts among youth. “Blockages” of these goals included the following: “repeating a school grade, getting suspended from school, and receiving at least one failing grade” and are associated with a 2.31 increase in likelihood of committing a property offense in young males (Maschi, 2006, p. 62).

Winters (1997) suggests that poor school attendance leading to school dropout could be a major factor in the student’s later involvement in the juvenile justice system. Lochner and Moretti (2004) develop this idea by suggesting that school attendance could have a place in crime prevention as it provides youth with an occupation during the day thus preventing delinquency. This could play a key role in preventing further criminality later in life considering the dependent association of current criminal acts on past criminal activity. Furthermore, the increases in knowledge and decision-making skills through education not only contribute to the advancement of the student but also discourage poor decisions that are then perceived as more costly to the student.

School dropout has been specifically associated with involvement in the criminal justice system. High school dropouts have a five times greater likelihood of entering prison than a high school graduate (Western et al., 2006). Ysseldyke, Algonzzine, and Thurlow (1992) reported that 82% of incarcerated offenders in the U.S. are school dropouts. Since the inception of the “War on Drugs”, the chances a man without a college education would enter prison has tripled. This has been more pronounced in minority populations: 60%–70% of black males born since the 1960s who did not complete school have entered prison (Western & Wildeman, 2009).

Lochner (2004) investigated data from the National Longitudinal Survey of Youth in conjunction with criminal records. He found a greater likelihood for criminal involvement among those who did not complete high school. Furthermore, when accounting for potentially confounding factors such as race, family background, and local conditions completion of high school showed an inverse correlation to

crime. Those who completed high school were 30% less likely to generate income through criminal activity and were 81% less likely to be incarcerated in 5 years as compared to high school dropouts. However, using self-reported data, Lochner's work also revealed that the difference in criminal activity among two groups of high school completers and high school dropouts becomes evident as early as age 15 before high school dropout or graduation. This was similar to other findings that indicated differences occur by age 13. Lochner and Moretti (2004) found that "education affects the probability of imprisonment at all schooling levels after controlling for age, state of birth, state of residence, cohort of birth, and year effects" (p. 160). Furthermore, an additional year of education was associated with a significant decrease by over 10% in violent and property crimes. The connections between obtaining an education and incarceration should alert society to the necessity of ensuring the successful education of children with incarcerated parents beginning at an early age (Farrington, 1987).

The Economics of the Problem

"Given the large social costs of crime, even small reductions in crime associated with education may be economically important" (Lochner & Moretti, 2004, p. 155). Lochner and Moretti report that although the cost-benefit of education may not be evident on an individual basis, an investment in education in society as a whole is quickly paid off by a decrease in crime. Obviously, education enables individuals to draw greater payment for employment. This higher level of income works as a deterrent against crime and as an incentive to continue work by making the hours of work missed due to incarceration much more costly to an individual. Furthermore, education may alter an individual's character or personality so that the person would be less inclined to participate in criminal activity. For example, Lochner and Moretti suggest that one's patience or risk aversion may be increased through education.

Another economical perspective is to consider the importance of healthy child development within the context of community and economic development. The National Scientific Council on the Developing Child at Harvard University (2007) stated, “Child development is a foundation for community development and economic development, as capable children become the foundation of a prosperous and sustainable society” (p. 4). Knudsen and colleagues support this as well, “Extensive evidence indicates that cognitive, social, and emotional capacities play important roles in the attainment of adult economic productivity, and all are shaped by early life experiences” (2006).

Conclusion

Out of these statements comes support for investigating and understanding the educational needs of children of incarcerated parents. From this knowledge we can develop supportive interventions that can strengthen schools, empower teachers, and enable these children to learn under the most optimal conditions. Furthermore, we can revisit educational and incarceration policies and procedures that may be adversely affecting this population of children to ensure they are supported in their education, in the development of their work ethic, and in their role as a productive citizen of their state and country.

CHAPTER 3

METHODS

Introduction

The purpose of this study was to analyze the relationship between parental incarceration and children's academic performance by investigating the issue through two approaches. The first focused on comparisons of academic performance under parental incarceration versus non-incarceration status; the second focused on factors that might predict poorer school performance among children with incarcerated parents.

This chapter provides a detailed description of the methods used to conduct this study. The first analysis was conducted by comparing data collected through surveys and school records reviews of children in both the experimental and comparison groups in order to address Research Questions 1 and 2. The methodology for survey development and data collection are described. A search for explanatory variables related to school performance with the intent of developing a linear predictive model of individual student school performance was performed to address Research Question 3. All methodology and instrumentation was approved by East Tennessee State University's Institutional Review Board (IRB) for the Protection of Human Subjects.

Study Design

Due to the stigma associated with incarceration, many individuals and families hesitate to reveal any connection with the criminal justice system. This means that large groups of children with incarcerated parents are not readily available for experimental studies. This inhibits random sampling among this population for research purposes. As a result, a convenience sample was drawn from two cohorts of children involved in mentoring programs in a southeastern, urban location. Using a quasi-

experimental study design, participants self-selected into the study and had the option of receiving an incentive in return for their involvement.

A cross-sectional survey gathered primary, self-reported data while secondary school data were also obtained from a school district database. Independent and dependent variables were compared between two treatment groups. Factors associated with school performance were analyzed in order to derive a primary dependent variable along with three to five independent variables showing significant relationships with participants' school performance.

Sampling Frame

The sample was drawn from a selection of children involved in two mentoring programs run by a Big Brothers Big Sisters organization. The selection was provided by a data analyst at Big Brothers Big Sisters. The "experimental" group was drawn from their Amachi "mentoring children of prisoners" program. Big Brothers Big Sister's eligibility requirements for this program included that children must report having a parent currently incarcerated in a jail or prison. The "comparison" group was drawn from a group of comparable children enrolled in Big Brothers Big Sister's mentoring program specifically for children living in a single-parent household. A total of 162 potential students in the Amachi sampling frame and 161 in the single-parent household frame were available for inclusion in the study. A sample size of 100 children of prisoners and 100 "single-parent household" children was sought, with the assumption that a 20% prevalence of a common variable would be identified to support a six variable model in addressing the Research Question 3. In order to attain a sample large enough for statistical analyses, more than one participant per family were allowed to participate; consequently, multiple sibling pairs and groups were included in the sample. Oversampling within households was also allowed in order to prevent potential conflict from arising within the families if only one child were eligible to receive an incentive.

Participants drawn from the Amachi program were fairly representative of the overall population of children of incarcerated parents except for the fact that this group may have had a higher level of social support (through their mentor, the mentoring program, and other resources brought in through the mentoring relationship) than other children in the priority population. However, this sample most likely provided a more accurate representation than a group of children with incarcerated parents who are currently in state custody through the foster care system or juvenile justice system.

Survey Development

A number of factors correlated with school performance can be identified through a literature review; however, a standardized survey to collect information about all of these factors has not been published. Hence, a survey was created for the purpose of collecting the information needed for this study. Survey development began with the practical needs of the project in mind: when were the participant's parents incarcerated and where did the participants attend school? The remainder of the survey items was crafted to gather qualitative information about potentially confounding factors impacting school performance as supported by an extensive review of the literature. Such factors included the following: age, race, last completed grade, extracurricular activities, school moves, household moves, single-parent household status, residence with parent prior to incarceration, changes in primary caregiver, relation to primary caregiver, educational level of primary caregiver, other adults residing in household, annual household income, access to medical care, and counseling services received.

Survey development was also guided by the theoretical framework of the research project. The majority of the factors assessed in this study focused on the individual child or his or her microsystemic relationships. These factors were age, race, grade level, school moves, special education designation, household moves, living in a single parent household, events of parental incarceration, prior residence

with an incarcerated parent, other adults living in the household, changes in caregivers, relation to caregiver(s), extracurricular and community activities, annual household income, access to medical care, and counseling services received.

This study also gathered information in light of mesosystemic conditions present in the children's lives as a number of the relationships represented on this level are sensitive to changes that may occur due to parental incarceration. Parent or caregiver and teacher relationships could be influenced by the number of school moves. Parent and caregiver relationships could be impacted if the incarceration causes a change in households or annual household income. The education level of the caregiver could affect their interactions with the child's educators. Hence, the following measures were assessed in order to account for potential mesosystemic impacts: school moves, household moves, living in a single parent household, changes in caregivers, relation to caregiver(s), parental incarceration, the education level of caregivers, other adults in the household, annual household income, access to medical care, and counseling services received.

The exosystem was not investigated extensively in this study; however, a few factors were gathered that may evidence the impact of the exosystem over children in this study including events of parental incarceration, access to medical care, and counseling services received.

Some factors were gathered to account for the effects of the macrosystem on the study sample. Accounting for the number of changes in caregivers was important particularly if parents lost custody of their children due to current policies that affect parental rights of inmates. Access to medical care and counseling services used were also assessed, which would reflect the impact of service provision to families in need. Involvement in activities could be a reflection of cultural norms among families, and finally, the incidence of parental incarceration are a reflection of current national and state policies regarding incarceration.

In order to assess the temporal aspects of parental incarceration on children's school performance attempts were made to gather information about the specific years of a parent's imprisonment as well as the ages of the children during the parent's incarceration.

Data Collection

In order to maintain confidentiality contact with potential participants was made through the Big Brothers Big Sisters office. The data collection process was comprised of the following efforts: The families of potential participants were contacted in order to obtain the caregiver's consent to access the school records of the participant. Caregivers completed a consent form and a survey asking for information about school enrollment, the parent's incarceration, and a number of other potentially confounding factors. Incentives, which were backpacks filled with school supplies, were made available to all participants upon receipt of all forms necessary for inclusion in this study.

First, a letter, flyer, consent form, and survey were mailed to the families informing them of the study and providing the materials needed to participate. This packet also included an introductory letter from Big Brothers Big Sisters. After 1 week nonresponsive potential participants were contacted by phone from the Big Brothers Big Sisters' office using an IRB approved script; they were contacted by phone once again after 2 weeks from the initial mailing. In order to disperse incentives in an efficient manner, five events were organized where backpacks were handed out at community centers within the projects where participants lived. Caregivers who had not yet completed the forms were also allowed to fill out or turn in forms on-site at those events where the participants could then pick up a backpack. Home visits were also made in order to pick up forms and drop off backpacks. This was done for families who may have had a change in mailing address and did not receive the initial mailing of forms or for families that were unable to attend the event due to a lack of transportation. Every effort was made to

accommodate the families' participation throughout the data collection process. This process occurred over a 6-week span during the months of July and August of 2008.

Completed surveys provided a list of schools where participants were enrolled during their elementary and middle school years. This list revealed that the participants mostly attended school within one large metropolitan school district. This school district mandated a lengthy application process for researchers to use its database. This was successfully completed. With guardian consent and the permission of the involved school district, the following information was requested from each participant's school records: grade point averages, the Tennessee Comprehensive Assessment Program Achievement Test scores, attendance, disciplinary reports, parent and teacher conference attendance, grade retentions and promotions, special education referral or special education hours, Individualized Education Programs, counseling services hours, free and reduced designation, withdrawals (mobility), and English as a Second Language status. A contact within the school district provided the requested data from the school district database.

Data Analysis

Research Question 1

Will children of incarcerated parents show an overall significantly poorer level of school performance as compared to the comparison group?

Independent samples *t*-tests of selected school performance measures were completed to assess differences in scores between participants with an incarcerated parent and participants experiencing no parental incarceration. Pearson's Chi-squares and odds ratios were also obtained to assess the independent variables among the two groups, as well.

Research Question 2

Will children show significant positive or negative change in school performance after the onset of parental incarceration?

Participants in the experimental group were matched with participants in the control group by age and grade level. Paired samples *t*-tests were to be used to analyze differences in school performance measures before and after the onset of parental incarceration. ANOVAs were anticipated to assess differences in school performance measures between the matched experimental and comparison group participants at multiple points before, throughout, and after the parent's incarceration.

Research Question 3

What factors present in the lives of children with incarcerated parents (particularly parental incarceration) significantly predict poorer individual school performance during elementary and/or middle school years?

Independent samples *t*-tests were conducted to compare the prevalence of each potentially confounding variable within the experimental and comparison groups while denoting significant differences. Chi-square analyses identified variables potentially related to "failure" in school performance that were analyzed in further study. These Chi-square tests investigated the single effects of the following variables in their relationship to a primary dependent variable related to school performance: gender, race, age, single-parent household situation, income, caregiver education level, parental incarceration, the extent of the parent's incarceration, the relation of the caregiver to the child, access to medical care, counseling services received, school mobility, number of household changes, the presence of other adults in the household, extracurricular activities, and annual household income.

Independent variables were chosen for inclusion in further analyses if the single effects relationship was found to be significant at the 0.05 level for a one-tail hypothesis test predicting failure or provided an odds ratio value greater than 1.5. After completing Pearson's Correlation analyses on the remaining variables, linear regression examined the combined effects of those independent factors on the chosen dependent variable. Variables were eliminated until a three-variable regression model to predict the selected dependent factor for failure in school performance remained. Candidate dependent variables for school performance considered included annual Tennessee Comprehensive Achievement Test scores, students' annual grade point averages, and students' attendance rates. The independent and dependent variables under investigation were chosen through an intensive review of the literature, discussions with experts in the field, and a personal understanding of factors particularly impacting children of incarcerated parents.

Index Development

Current indices measuring school performance typically focus on the performance of a school or a school district as a whole. Investigations for an index measuring individual student performance for the purpose of comparisons led to indices used for anticipated achievement or other purposes. An index assessing an individual's current school performance incorporating a diverse number of appropriate indicators was not found in the literature. A respected professional in the field of education also verified that an index useful for the purposes indicated in this study would need to be developed (Glover, personal communication, March 2008).

The linear model developed could inform the creation of an index by indicating the most appropriate independent variables related to school performance as determined by the data analyses. Significantly predictive variables determined through the data analyses were included in the linear model and weighed based on their odds ratio scores.

Conclusion

Early intervention targeting educational performance may be more effective than interventions at adolescence; they are definitely more cost effective than rehabilitation after criminal involvement. Ideally, interventions should address cognitive development leading to increased “cognitive ability, school readiness, or school achievement”, also contributing to “greater levels of school commitment and motivation, better placements in school, and consequently...lower rates of delinquency”(Reynolds, 1998, p. 343). By considering the potential impact of negative school experiences due to parental incarceration, this study provided some insight into the possible role of these disruptions leading to poorer school performance.

CHAPTER 4

RESULTS

The purpose of this study was to explore the difference in school performance between children with incarcerated parents and a comparable group without incarcerated parents and to determine what unique factors, particularly parental incarceration, play a role in predicting school performance of children with incarcerated parents.

A cross-sectional survey was administered to 174 participants with each having completed consent forms and access to school records granted. The response rate for survey and consent form completion was 54%. The sample size of the comparison group was 95 participants (59% response rate); the experimental group contained 79 participants (49% response rate).

Two-tailed *t-tests* were used to determine differences in test scores between participants with incarcerated parents and participants without (Research Question 1). Additionally, 2 x 2 tables analyzed the differences in potentially confounding factors between the two groups (Research Question 1). Chi-square analyses of independent variables and TCAP subtests began the process of determining the factors predicting school performance within the sample. Linear regression was performed on variables selected after this screening process to produce a final model predicting school performance (Research Question 3). The statistical software used for all analyses was SPSS 15.0 or higher.

Demographics

Dichotomization of Independent Variables

All of the independent variables analyzed were collected from the survey administered to each participant in the sample with exception of the variable Gender that was provided within the set of school data. Information for some variables was not available and, hence, was not collected or analyzed

in this study. These include the overall grade range of participants, special education referrals, and disciplinary reports. Information for “Community Interaction” was gathered by recording participants’ extracurricular and community activities; it was renamed “Activities”. Table 1 provides a description of each variable as well as the criterion guiding the dichotomization of each variable, which was based on a thorough review of the literature. Dichotomizing the data was necessary for the Chi-square and 2 x 2 table analyses.

Table 1

Dichotomization of Independent Variables

Description	Variable	Criterion
Race and Ethnicity	Race	0 = Minority group - African American, Hispanic, Asian 1 = Majority group - Caucasian
School Mobility	School Mobility	0 = Four or more school moves 1 = Zero to three school moves
Activities	Activities	0 = No extracurricular activities 1 = One or more extracurricular activities
Parental Incarceration	PincAll	0 = No parental incarceration 1 = Parental incarceration
Single-parent Household	SingleH	0 = Single-parent household 1 = Not a single-parent household
Number of Household Moves	House	0 = Four or more household moves 1 = Zero to three household moves

Table 1 (continued)	Care	0 = No changes in caregiver
Number of Primary Caregivers		1 = Child changes caregivers
Relation of Child to Caregiver	CRelation	0 = Foster parent, family friend, or relative 1 = grandparent or parent
Primary Caregiver Education	CEdu	0 = Some high school/GED/high school diploma/some college 1 = Undergraduate degree/any higher degree
Lower Primary Caregiver Education	CEdu12	0 = Some high school/GED 1 = High school diploma/some college/undergraduate degree or higher
Number of Other Adults Living in Household	Adults	0 = No other adults living the in household 1 = One or more other adults living in the household
Annual Household Income	Income	0 = Annual income of \$9,999 - \$19,999 1 = Annual income of \$20,000 or higher
Counseling Services Received	Counsel	0 = No counseling received 1 = Received counseling
Access to Medical Care	Medical	0 = No access to medical care 1 = Able to access medical care
Prior Residence with Incarcerated Parent	PLiving	0 = Child lived with parent prior to incarceration 1 = Child did not live with parent

Table 1 (continued)

Events of Parental Incarceration	Events	0 = Single event of incarceration 1 = More than one event of incarceration
Age During Parental Incarceration	AgeOf	0 = Incarceration occurs between 1 - 12 years of age 1 = Incarceration occurs at 13 years or older
Gender	Gender	0 = Male 1 = Female

Frequencies of Independent Variables

The participants' ages ranged from 6 to 16 years. Table 2 provides a layout of characteristics describing the study population as well as frequencies of the variables analyzed in this study. The percentages may not add up to 100% in some categories to due to the inconsistency in data reporting among some participants. A majority of the study's participants were in a minority racial or ethnic group. About 70% of participants lived below the poverty level.

Table 2
Demographic and Variable Frequencies of Study Sample

Variable	Group		
	Experimental	Comparison	Total
	N=78	N=96	N=174
	n(%)	n(%)	n(%)
Race or Ethnicity			
African American	51(65)	74(77)	125(72)
Hispanic	1(1)	6(6)	7(4)

Table 2 (continued)

Caucasian	18(23)	14(15)	32(18)
Other (Bi-racial)	5(6)	2(2)	7(4)
No response	3(4)	0(0)	3(2)
<hr/> Gender			
Male	36(46)	39(41)	75(43)
Female	42(54)	56(58)	98(56)
<hr/> Parental incarceration			
No incarceration	0(0)	51(53)	51(29)
One or more event	76(97)	40(42)	116(67)
Status unknown	0(0)	4(4)	4(2)
No response	2(3)	1(1)	1(1)
<hr/> Annual Household Income			
Less than \$9,999	37(47)	48(50)	85(49)
\$10,000 - \$19,999	20(26)	16(17)	36(21)
\$20,000 - \$24,999	7(9)	8(8)	15(9)
\$25,000 - \$29,999	4(5)	10(10)	14(8)
\$30,000 - \$39,999	3(4)	3(3)	6(3)
\$40,000 - \$49,999	5(6)	1(1)	6(3)
\$50,000 - \$100,000	0(0)	2(2)	2(1)
No response	1(1)	8(8)	9(5)
<hr/> Adequate access to medical care			
Adequate access to medical care	60(77)	66(69)	126(72)
Inadequate access to medical care	18(23)	29(30)	47(27)
<hr/> Counseling services received			
Counseling services received	35(45)	27(28)	62(36)
No counseling received	41(53)	69(72)	110(63)

Table 2 (continued)

Caregivers' education level			
Some high school	20(26)	29(30)	49(28)
GED	14(18)	8(8)	22(13)
High school diploma	13(17)	20(21)	33(19)
Some college education	19(24)	17(18)	36(21)
Undergraduate college degree	5(6)	6(6)	11(6)
Master's college degree	0(0)	4(4)	4(2)
Other	1(1)	6(6)	7(4)
No response	6(8)	6(6)	12(7)
Change in caregivers			
No changes	57(74)	21(22)	78(45)
One or more changes	20(26)	75(78)	95(55)
Relation to caregiver			
Parent	42(54)	55(57)	97(56)
Grandparent	22(28)	16(17)	38(22)
Relatives	7(9)	3(3)	10(6)
Foster parents	2(3)	0(0)	2(1)
No response	5(6)	22(23)	26(14)
Household moves			
Zero moves	47(60)	44(46)	91(52)
One to three moves	25(32)	33(34)	58(33)
Four or more moves	4(5)	18(19)	22(13)
School moves			
Zero to three moves	66(86)	74(77)	141(81)

Four or more moves	11(14)	22(23)	33(19)
<hr/>			
Extracurricular Activities			
Involved in no activities	15(19)	13(14)	28(17)
Involved in one or more	62(80)	80(86)	142(84)
<hr/>			
Other adults in household			
Up to 3 adults in household	31(46)	30(34)	61(39)
More than 3 adults in household	36(54)	59(66)	95(61)
<hr/>			

The largest number of participants reported that their caregivers had an educational level of just “some” high school; only 8% reported getting a college degree. Over half the participants changed caregivers at least once during their elementary and middle school years. For the majority of those years, the caregiver was listed to be a parent (56%) or a grandparent (22%). A large proportion of participants (84%) were involved in one or more activities outside school, this included being enrolled in a mentoring program.

The comparison group was not anticipated to report high levels of incarceration due to the presumption that children affected by incarceration would only be included in the Amachi portion of the sample. However, an unexpectedly high number of children in the comparison group (42%) reported parental incarceration so that 66.7% of the entire sample reported parental incarceration. Only 29.3% of the entire sample stated they did not have a parent incarcerated at any point in their life. Thirty-two percent of the sample reported experiencing multiple incarcerations of one or both parents. However, this fact is limited in that comparison group participants could only report a single incidence of parental incarceration and were not asked further details.

Additional information regarding parental incarceration was collected from the experimental group only and was not collected from the comparison group due to the expectation that parental incarceration would not be prevalent in this subsample. The following numbers highlight different aspects of parental incarceration throughout the childhood of these participants:

- 44 (56%) lived with their incarcerated parent prior to incarceration
- 63 (80%) reported parental incarceration during elementary years (ages 5–10; grades 1–5)
- 24 (30%) reported parental incarceration during middle school years (ages 11–13; grades 6–8)
- 14 (18%) report having a parent incarcerated their entire life, with 4 (5%) having a parent in-and-out throughout childhood, and 9 (11%) having a parent serve a sentence for the duration of their childhood thus far.
- 27 (34%) had a parent incarcerated at birth or in infancy.
- 60% encountered it sometime after birth to 12 years of age.
- 5% reported parental incarceration during teen years.
- 12 (15%) reported having a parent currently incarcerated.

The average number of times a parent was incarcerated was 2.1 times (with the lowest being one incarceration up to six separate events of incarceration). However, this is grossly underestimated because caregivers were unable to report every incidence of incarceration. Based on the responses of 74 participants, each spent an estimated 4.8 years of his or her life having a parent incarcerated. This estimate was conceived by counting each incidence of incarceration as a year-long sentence and treating in-and-out jail time throughout a child's life as a life-long sentence.

Answering Research Question 1

Question recap: Will children of incarcerated parents show an overall significantly poorer level of school performance as compared to the comparison group?

The original “comparison” and “experimental” groups were organized according to participation in the standard or the Amachi mentoring programs, respectively. However, the comparison group was compromised by its unexpected high number of participants experiencing parental incarceration. Consequently, new “treatment” groups were formed where the entire sample was grouped by “Ever” or “Never” experiencing parental incarceration at any point from birth through middle school years. The “Ever” group included 115 participants who reported parental incarceration; the “Never” group comprised of 51 participants who reported to never having a parent incarcerated. The final sample size was 167 due to a lack of response or unclear response in 7 participants.

t-test Analyses of TCAP Scores between Groups

Data for participants’ TCAP scores, attendance, and annual GPA were collected with the intent of selecting one of these factors as the dependent variable representing school performance. A review of the data showed insufficient information for attendance and GPA to serve as the dependent variable. Data were provided for only about 2 years and contained gaps for many participants. As a result, TCAP test scores were selected as the dependent variable because data were provided for all participants and spanned up to 5 years of testing. Furthermore, TCAP test scores are already used as the state of Tennessee’s method for measuring school performance.

TCAP scores were provided in two forms: three level performance indicators (1 = below proficiency, 2 = proficient, and 3 = advanced) and raw scale scores. A range of scale scores is associated with each performance level; however, these ranges may vary from year to year. In order to retain as

much variation as possible, the TCAP scale scores were chosen for this analysis. Two-tailed *t*-tests of summed TCAP scores of both “Ever” and “Never” groups were conducted for all years available – from 2003 to 2008.

As shown in Table 3, the *t*-scores for all tests were negative, with significance noted for 1 year and another approaching significance. A significant difference was noted in the scores of the groups for the 2005-2006 year ($p = 0.042$) with the “Ever” group showing a lower summed test score average than the “Never” group (1,300 and 1,353, respectively).

Table 3
t-tests of Summed TCAP Scores by Experience of Parental Incarceration

Year of Testing	Parental Incarceration	Sample				
	Status	Size (n)	M	SD	t	p
07-08 Scores	Yes	66	1,336	97	-0.821	0.414
	No	39	1,353	98		
06-07 Scores	Yes	66	1,323	92	-1.177	0.243
	No	35	1,347	98		
05-06 Scores	Yes	55	1,300	116	-2.085	0.042
	No	26	1,354	103		
03-04 Scores	Yes	31	1,252	122	-1.452	0.154
	No	19	1,298	100		
02-03 Scores	Yes	23	2,390	158	-1.891	0.07
	No	12	2,485	131		

Comparisons among the two groups’ scores in the TCAP subtests of math, reading and language arts, social science, and science in the years 2005-2008 showed no significant differences, although *t*-scores in the math section approached significance with a *p*-value of 0.055. Once again, all *t*-scores were negative as the mean TCAP score was consistently lower for the participants with an incarcerated parent (see Table 7 in Appendix B).

2 x 2 Tables of Independent Variables

Independent variables were compared between the “Ever” and “Never” groups using 2 x 2 tables (see Table 8 in Appendix B). A Bonferroni adjustment revealed that tests would need to have p -value of 0.02 or less to obtain statistical significance. The following factors had significant associations with p -values less than 0.01: number of caregiver changes ($p = 0.000$, OR = 0.108) and caregiver education, which was dichotomized as some high school versus high school completion ($p = 0.001$; OR = 3.683). Other associations approached significance. If the alpha value were set at 0.05, CRelation, the relation of the caregiver to the child, would be significant ($p = 0.037$) and Counsel would approach significance with a p -value of 0.079.

Answering Research Question 2

Question recap: Will children show a significant positive or negative change in school performance after the onset of parental incarceration?

Essentially this question begins to investigate if and how the time span of parental incarceration impacts children’s learning. The time-related information gathered showed that parents of some participants involved had been incarcerated a mean of 2.1 times during the children’s lives, and these children spent an estimated 4.8 years of their lives with a parent behind bars.

However, in order to fully address this question, data regarding the entire timeframe of parental incarceration were needed. Unfortunately, few participants were able to detail the actual dates of incarceration, with most providing approximate years of intake without providing the length of the sentences. This insufficient data prevented an appropriate response to this research question; therefore, it was dropped from the analyses. The complexities and potential solutions for answering

Question 2 in future research are discussed further in Chapter 5: Results. Please see the “Research Question 2” and “Directions for Future Research” sections of Chapter 5 for more information.

Answering Research Question 3

Question recap: What factors present in the lives of children with incarcerated parents (particularly parental incarceration) significantly predict poorer individual school performance during elementary and middle school years?

A process involving several different analyses was followed in deriving the final model of independent variables predicting individual children’s school performance. All independent factors were analyzed for significant associations with the dependent variables through a series of bivariate Chi-square analyses, tested for multicollinearity through Pearson’s correlation tests, and weighed using linear regression analyses.

t-test Analyses of Independent Variables

Independent *t-test* analyses were used to assess the presence of each independent variable within the experimental and comparison groups. Both groups were found to be relatively uniform with significant differences seen only in the following variables: number of caregivers (Care, $p = 0.000$), caregiver education level (CEdu, $p = -0.042$), counseling received (Counsel, $p = 0.015$), parental incarceration (PincAll, $p = 0.000$), household moves (House, $p = 0.011$), and the number of events of parental incarceration (SVSM2, $p = 0.000$).

Determining Relevant Dependent and Independent Factors

To prepare for bivariate chi-square analyses, dependent variables were created by dichotomizing TCAP performance level scores from “below proficiency, proficient, and advanced” to the following: 1 = poor performance and 2 = proficient or advanced performance. These TCAP scores were

drawn from four test subject areas – reading and language arts, mathematics, social studies, and science – in the following academic years: 2002-‘03, 2003-‘04, 2005-‘06, 2006-‘07, and 2007-‘08. Test scores from 2004-2005 were excluded as the subject areas were defined differently from previous tests. Twenty chi-square tests were conducted with all the independent variables versus these dichotomized dependent variables.

Chi-square tests revealed independent factors that were significantly associated with the dependent variables (see Table 6 in Appendix B). The small sample size of this study would only support the development of a model with three to five variables; hence, the alpha value was set at 0.05 in order to weed out less significantly associated variables at this step of analysis. The alpha value was set at a level higher than typical analyses used to screen for potential variables for model development to facilitate the elimination of several of potential independent variables. Variables showing the greatest number of significant relationships to the dependent variables were included in further analyses.

The following eight variables were retained for further investigation through the model development process: access to medical care, caregiver education, annual household income, school mobility, house mobility, along with variables gender and race to act as stabilizing factors. Parental incarceration was also retained for linear regression analyses due to it being central to the research questions.

Counseling services received (Counsel), the relation of the child to the caregiver (CRelation), and the time in life of a parent being incarcerated (EVSL2) each showed only one significant relationship to a dependent variable out of the 20 analyses; therefore, they were dropped from further analyses. Being in a single-parent household (SingleH) and having extracurricular activities (Activities) showed two significant relationships out of 20 analyses; therefore, these variables were dropped from further analysis, as well.

Model Building

Pearson's correlations were run on the remaining factors to ascertain how their relationships might affect linear regression findings, as shown in Table 4. Income showed correlations with access to medical care (Medical) and gender as well as race and caregiver education (Cedu) (which were significant, considering an alpha value at 0.01); caregiver education also showed a significant correlation with the number of household moves (House).

Table 4
Pearson's Correlations Among Potential Model Variables

Variables	1	2	3	4	5	6	7	8
1 Race	-							
2 School Mobility	-0.06							
3 Caregiver Education	0.00	0.09						
4 Income	0.23**	-0.06	0.32**					
5 Medical Care Access	0.02	-0.04	0.10	0.18*				
6 Parental Incarceration	-0.11	0.07	0.05	0.04	-0.09			
7 Gender	0.03	0.04	-0.12	-0.16*	0.01	-0.06		
8 Household Mobility	-0.01	-0.18	-0.29**	-0.11	0.01	-0.07	0.03	-

*p<0.05; **p<0.01

Linear regression was the final step taken in developing a model of factors prevalent in the lives of children with incarcerated parents potentially predicting school performance. Dependent variables were created by summing the scale TCAP scores for each of the following school years: 2007-2008, 2006-2007, and 2005-2006. Scores from previous school years were excluded due to a substantial decrease in sample size for those years. The preliminary model consisted of eight variables including access to medical care, caregiver education, annual household income, school mobility, house mobility, gender, race, and parental incarceration, which were entered at once into linear regression analyses. As variables were eliminated, different combinations of factors were investigated to further control for interactions among the factors involved; however, specific tests for interactions were not performed. A number of factors dropped from the model as they failed to show consistent, significant associations

with the dependent variables. Beta coefficients from these analyses provided weights for the variables in the resulting model.

The inclusion of factors – race, gender, and parental incarceration – did improve the R^2 value, enhancing the ability of the model to predict up to 34% of the variance (see Table 10 in Appendix B). Still, they showed a negligible impact on improving prediction of performance within these analyses. The most parsimonious model was found with the three following independent variables: annual household income, school mobility, and caregiver education, which explained 25%–31% of the variance in TCAP scores (see Table 5) and was significant in all years tested. The model is represented as follows:

$$\text{TCAP Level of Proficiency} = 0.37(\text{Income}) - 0.32(\text{School Mobility}) + 0.19(\text{Caregiver Education}).$$

Table 5

Linear Regression of Final Model Predicting School Performance

DV	Independent Variables	Beta coefficient	R^2	Method	p
07-08 Scores			0.308	Enter	0.000
N=108	Income	0.368			0.004
	School Mobility	-0.318			0.009
	Caregiver Education	0.194			0.117
06-07 Scores			0.326	Enter	0.000
N=104	Income	0.277			0.026
	School Mobility	-0.392			0.002
	Caregiver Education	0.359			0.005
05-06 Scores			0.253	Enter	0.009
N=86	Income	0.219			0.146
	School Mobility	-0.251			0.090
	Caregiver Education	0.395			0.013

As is seen in Table 5, the R^2 and beta coefficients vary according to the dependent variable used. The

model is based on the coefficients drawn from the most recent school year – 2007-2008 – which had the largest sample size. The effectiveness of this model was not tested, being beyond the scope of this study; such evaluations will be left for future studies.

Summary

In response to Research Question 1, analyses revealed a trend toward lower TCAP performance among children with incarcerated parents; however, this difference was not strongly significant. Significant differences were found between the groups in the number of caregivers they had and the education level their caregivers had received. Due to a lack of information, analyses to respond to Research Question 2 were thwarted; consequently, it was dropped from the research study. To answer Research Question 3 additional analyses were conducted to investigate which independent variables, specifically the factor of having an incarcerated parent, might be related to TCAP performance. A model with variables annual household income, school mobility, and caregiver education resulted and could be used in informing the development of an index predicting up to 31% of the variance in individual student TCAP performance among urban at-risk groups.

CHAPTER 5

DISCUSSION

Introduction

As stated previously, the goals of this project were to compare the school performance of children of incarcerated parents with an appropriate comparison group as well as the general population; to observe whether or not a positive or negative change in school performance occurs after onset of parental incarceration; and to inform the development of a index for use in comparing individual at-risk student performance.

Research Question 1

Interpretation and Meaning

Comparing test scores. Five *t*-test analyses were conducted comparing TCAP test scores among participants with and without incarcerated parents. The test scores for all students with incarcerated parents (the “Ever” group) trended toward lower levels than those of students with no incarcerated parents (the “Never” group). All *t*-tests of the summed TCAP scores were headed in the “correct” direction, which was negative, with the mean values for the test scores for the “Ever” group being lower each year analyzed. However, only two tests approached or achieved a significant difference assuming an alpha value of 0.05: the analysis of the ’02-’03 scores gave a *p*-value of 0.070 and ’05-’06 scores gave a *p*-value of 0.042.

Although the numbers presented do not provide overwhelming evidence that children of incarcerated parents perform worse in school, they still suggest a trend that should be investigated further. The negative *t* scores and the significance or approach thereof of two out of five analyses suggests a trend of lower TCAP performance by test takers with an incarcerated parent.

A variation in the mean score among the years tested was observed. It is understood that the scoring system for the TCAP test may vary from year to year, which would contribute to differences in the summed scale scores compared for these analyses. However, all students were administered the same test each year and all students retained their disadvantaged status each year. This allows for credible comparisons of the test scores among the “Ever” and “Never” groups within each year.

TCAP scores were chosen as the dependent variable in this study due to the number of scores obtained for the study participants. However, gaps in the data were still a concern. The range in ages of participants is one contributing factors – data for all years assessed were only available for participants currently in high school. The younger the participant’s age, fewer years of scores were available. However, there were still years of missing data even for older children. A previous study by Stanton (1980) revealed that teachers blame irregular attendance for the lack of test scores for some children.

Comparing independent variables. The 2 x 2 tables of the independent variables among the “Ever” and “Never” groups revealed that these groups are relatively uniform. Out of the 18 independent variables, only 2 differed significantly among the two groups. One was the variable Care, which represented changes in caregivers at any point during elementary or middle school years. The odds ratio (0.108) was protective, meaning that participants with an incarcerated parent changed caregivers fewer times than the participants without an incarcerated parent. The CRelation variable, the relation of the caregiver to the participant, revealed that a majority of the study participants were living with a parent.

The caregiver’s education level also differed significantly between the two groups when distinguishing between caregivers with a high school diploma and those with some high school education or a G.E.D. The odds ratio indicated that participants with an incarcerated parent were over 3.7 times more likely to have a caregiver without a high school diploma.

Relevance to the Literature

Comparing test scores. Empirical analyses of school performance among children of incarcerated parents are greatly lacking in the literature; only one study using a secondary data source was located. As stated in the literature review, previous reports of poor school performance among this population are often based on self-reported information from the children's caregivers or incarcerated parent (Bates et al., 2003; Lowenstein, 1986; Sack, 1977; Sack et al., 1976). Although the perspective of the parents and caregivers must be considered, it is understood that they may inadvertently involve bias in their reporting. Incarcerated parents are believed to report more positively, either having been misinformed or refusing to accept the truth about their child's academic performance; overburdened caregivers are likely to emphasize the negative aspects of the child's status (Sack et al., 1976). Nonetheless, observations and self-reports throughout the years have consistently suggested that children of incarcerated parents suffer academically upon a parent's incarceration. The one report by Stanton (1980) using secondary school data confirmed that children with a mother serving time in jail were significantly lower in class rank and significantly less likely to be in the top third of the class. However, the comparison group used in Stanton's study was comprised of children with a mother on probation which, in the present study, was included in the group that experienced parental incarceration. Hence, the comparison groups of these two studies differ, limiting the comparisons that can be made between findings.

Yet, the persistence of lower means in the TCAP scores among children of incarcerated parents in this study is remarkable in that the comparison group (those living in single-parent households with no incarcerated parents) is also at high risk for lower educational attainment. Single-parent households have been identified to place children at risk for lower school performance due to the inability of one parent to fully support a child's educational progress (Barton & Coley, 2007). When controlling for

income, Barton (2005) found that living in a two-parent household predicted 49.2% of the variation in high school completion rates. Negative correlations have been observed between a single-parent household family structure and a child's educational attainment; these correlations strengthen as the family ranks lower in socioeconomic status (SES) (Ermish & Francesconi, 2000).

The use of the TCAP as a measure of school performance among children of incarcerated parents is unique; consequentially, there are no studies available for comparison. More information is needed to better understand the complexities of the TCAP scoring system as they affect the findings of this study.

Comparing independent variables: change in caregivers. The first independent variable showing significance in the 2 x 2 table analyses was changes in caregivers. Finding that children of incarcerated parents were more likely to retain the same caregiver throughout elementary and middle grades was interesting because this population is generally assumed to be more transient than other children (Engel, 2006), moving among various schools, caregivers, and households.

Stanton (1980) investigated maternal incarceration and found that the greatest proportion of her participants lived with maternal grandparents (35%) while only 22% lived with their other parent. Sixty-two percent of her participants experienced one change in placement due to the mother's incarceration; 38% experienced more than one placement. It is possible that changes are occurring in the demographics of families impacted by incarceration. A more current study by Hanlon, O'Grady, et al. (2005) supports the current study's findings by showing that children remained relatively stationary despite a mother's incarceration. Only 20% of children lived with the current caregiver for 1 year or less, and only 10% did so for 2 years or less. The other 70% remained in a living arrangement established prior to the parent's incarceration. It is possible that the parent's negligent or criminal behavior may have prompted other caregivers to assume guardianship over the children early in life (Hanlon, O'Grady,

et al., 2005). Numerous studies affirm that prior to incarceration parents typically exhibit a lifestyle that precludes an adequate parenting relationship and safe environment for their children including little to no employment, low education, and absence of housing, as well as, drug abuse and other criminal behaviors (Bates et al., 2003; Dalley, 2002; Glaze & Maruschak, 2008). With this information in mind, a few scenarios are possible in explaining why the children did not report changing caregivers in this present study: more participants had a father in prison and stayed with their mothers, both parents were absent from the children's lives and they always lived with their grandparents, or the children lived in a multigenerational home with grandparents prior to their parents' imprisonment. This last scenario is supported by Hanlon, O'Grady, et al. (2005) who found that 55% of their sample was raised in their grandparents' homes where many of their parents also lived prior to their incarceration.

The relation of the caregivers to the children in this study was similar to current national statistics. Of the children reporting parental incarceration in this study, 62% reported living with a parent, 26% reported living with a grandparent, and 9% reported living with a relative. This is in agreement with federal statistics showing that 84% of state inmates report their children live with the other parent, 15% reported that their children live with a grandparent, and 6.2% reported that their children live with a relative (Glaze & Maruschak, 2008). The remainder lives in a foster home or with friends of the family.

Further investigation of the movement of children with incarcerated parents reveals differences in a child's experience based on whether the parent incarcerated is the father or the mother. According to the literature, children's experiences vary dramatically depending on which parent is incarcerated (Dallaire, 2006). This study included children with both maternal and paternal incarceration but did not measure the rates of either. A majority of children with an incarcerated parent in the United States are impacted by paternal incarceration; however, the number of children with mothers in prison has

increased 131% since 1991 (Glaze & Maruschak, 2008). As certain findings of this study such as the relation of the caregiver to the children mimic national statistics, it is possible that the breakdown of participants affected by paternal versus maternal incarceration is similar to national levels. Interpretations of this study's findings may be more understandable if considerations are made for the gender of the parent incarcerated.

The fact that this population did not change caregivers as much as expected is a positive finding considering that the children experience less disruption by staying at the same household (Hanlon, O'Grady, et al., 2005). Fewer disruptions could lead to a healthier adjustment after a parent's incarceration, particularly if children do not have to change caregivers, households, or schools. Some experts report that 4 to 6 months is required for a child to fully recover academically from changing schools (Emerson & Lovitt, 2003). Considering the lack of movement among households within the present study sample, it is possible that the risks attributed to parental incarceration were minimized, leading to higher TCAP achievement. This may lead to a conclusion that underestimates the risks to children due to a parent's incarceration.

What is unclear is the reason why the group never having a parent incarcerated changed caregivers more often. Stanton (1980) found that children with a mother in jail were significantly more likely to change schools than children with a mother on probation. This warrants further investigation.

Comparing independent variables: caregiver education levels. Perhaps a new piece of information garnered from this study is the fact that children with incarcerated parents were nearly four times more likely to go through elementary and middle school under the care of someone without a high school education. This was the second variable showing significance in the 2 x 2 table analyses. As previously reported, children with an incarcerated parent were 3.7 times more likely to go through elementary and middle school under the care of a caregiver who did not complete high school. Other

studies have also shown low education levels among caregivers; in 2005, Poehlmann found that 33% of the caregivers in her sample had less than a high school education.

Numerous studies over the years have confirmed that the educational level of a parent has a role in the educational achievement of his or her children. The caregiver as defined in this study may or may not be the child's biological parent; but in this study, 62% of the children with an incarcerated parent were living with their other parent. Nationally, 84% of state inmates report their children live with their other parent (Glaze & Maruschak, 2008). Therefore the implications of this finding involve the verified associations between low parent education and a child's subsequent educational attainment.

Sewell and Shah (1968) demonstrated that a parent's higher education level is significantly related to a child's perception of parental encouragement toward greater educational achievement. The level of parental education has also been associated with children's aspirations for educational achievement throughout life (Ojeda & Flores, 2008). And additional studies clarify that the level of education reached by children reflects their parent's educational attainment with a strength that implicates it as a causal factor, and this level is particularly among low income populations (Ermisch & Francesconi, 2001). Ermisch and Francesconi also report that a significant association exists between a parent's education level and his or her child's educational attainment, with mothers showing a stronger association than fathers. A review by Gofen (2009) found a "strong link between the educational level of parent and the educational level of their offspring" and concluded that "to a large extent, children inherit their parent's educational level" (p. 104). Several studies have been completed that also use the parent's education level as the "human capital" factor of parents contributing to children's educational attainment and consistently confirm it to be "statistically significant and quantitatively important, no matter how it is defined" (Haveman & Wolfe, 1995, p. 1855).

However, having a low education has not been found to be the only deciding factor in children of incarcerated parents' educational future. Poehlmann (2005) found that family environment may function as a crucial mediator in this problem. She found that "responsive, stimulating, and safe family environments were significantly associated with more optimal intellectual outcomes in children of incarcerated mothers" (p. 1281). Sameroff et al. (1993) provide support for this approach with their longitudinal analyses of IQ in children in light of a number of environmental risks (including maternal education level). They found that environmental factors could predict a substantial amount of variance in children's IQ scores. Bradley, Corwyn, Burchinal, McAdoo, and Garcia Coll (2001) discovered that enriching learning environments and activities provided by parents also impacts the behavior of children along with achievement. After accounting for the family's socioeconomic status, the mother's education level, the size of the family, the race or ethnicity of the family, as well as the presence or absence of the father figure, their results showed a significant positive relationship between the environment and achievement. Additionally, they realized that even among families in poverty a connection exists between stimulating environments and improved competence as well as improved behavioral outcomes (Bradley et al., 2001). These facts could provide additional reasons why the difference in TCAP scores among the two groups analyzed did not achieve the strength expected. Participant caregivers who were willing to fill out forms and surveys and bring their children by to pick up school supplies might be more likely to provide the home environments needed to overcome the negative impact of the parent's incarceration on school performance. The population of caregivers opting not to participate may also be less likely to provide optimal home environments. Hence, the lack of overwhelmingly significant differences in TCAP scores between the two groups may reflect the selection bias occurring because caregivers self-selected into the study.

Research Question 2

Despite an assiduous effort, the data collection process did not gather sufficient information detailing the timeframe of the parents' incarcerations. Many study participants and their caregivers did not know the information necessary to analyze the chronological aspect of the parents' incarceration. For the most part the children's current caregivers responded to survey questions; however, different interpretations of simple questions were also observed. This has been noted in other research studies involving vulnerable populations as well. Dalley (2002) provides a possible explanation through descriptions of her study participants who were incarcerated mothers. Her participants were identified as being "cognitive developmentally delayed", meaning they interpreted information in concrete terms and struggled to establish cause-and-effect associations. Similar responses given by the caregivers involved in this study could be due to such cognitive development issues or it could be due to their low educational attainment. Regardless of the reasons for these misunderstandings, the survey tool used should be reexamined and pilot tested prior to use in future studies to increase proper responses.

Nonetheless, the lack of information made comparisons of school performance before and after onset of incarceration impossible. What did become evident is the complexity of this research question. About one third of the Amachi group participants were already experiencing parental incarceration when they entered elementary school and 18% of this group dealt with parental incarceration throughout their childhood (either through a life-long sentence or multiple sentences). These factors would introduce historical bias into the analyses; hence, these participants should be excluded. The resulting sample size would be greatly reduced. This further complicates efforts to conduct empirical research on this population.

Plans to match experimental and comparison group participants would involve selecting participants who match at least by age and grade level. Increased control would be ideal by matching

students by classroom, school, and school district or by limiting participants to a certain age group so that all are within a specific grade range. However, such specificity would require a much larger population from which to sample, a luxury not currently possible when researching children of the incarcerated because of a lack in reporting and tracking of this vulnerable population due to privacy concerns.

Additional information may be found in the Limitations section. Recommendations are also listed in the Directions for Future Research section to enhance future efforts to answer this question.

Research Question 3

Interpretation and Meaning

Several chi-square, Pearson correlation, and linear regression analyses provided the following information used to answer Research Question 3. Significant correlations were detected among certain independent variables; however, with the highest value being 0.32, these correlations did not have the strength to imply possible issues with multicollinearity in moving forward with linear regression analyses. The correlations found were expected, and most have been observed in previous studies. Associations between income, race, gender, and access to medical care are typical. Correlations were also seen between caregiver education level along with income and household moves. The direction between education level and income was expected – lower education levels were associated with lower income. However, lower education levels were also correlated to fewer household moves – a finding that is not generally expected among low-income populations.

An analysis of potential predictors of school performance began with chi-square analyses of all potential independent variables and TCAP subtest scores in language arts, math, science, and social science. The salient variables were then entered into more inclusive, yet forced, models of the following

variables, which showed promising associations in prior exploratory analyses: race or ethnicity, gender, parental incarceration, caregiver education, school mobility, and annual household income. Considering the small sample size, the final model derived from this study was limited to three variables. However, including additional variables, particularly those considered conventional correlates of public health, could be useful in future research of larger sample sizes in differing sample populations. The screening process of this study provides information about these additional variables present in the lives of children with incarcerated parents that should be considered in further study.

The described data analyses revealed the most parsimonious model to include the variables of annual household income, school mobility, and caregiver education levels. As stated before, the model is based on beta coefficients from the dependent variables developed from the 2007-2008 TCAP test scores. Results from the 2007-2008 school year should best match the information given by the caregivers on the surveys, hence reducing the influence of recall bias. The role of all of these factors in predicting educational performance is supported by existing studies in the literature. However, the “estimated relationships” found through these analyses are not sufficient for extending causality considering the inability of this study to fully considering a wealth of other extenuating factors involved in TCAP performance; therefore, this information should be applied with caution (Haveman & Wolfe, 1995).

Differences in coefficients occurring among the school years may be contributed to the use of scale scores for the dependent variables. Scale scores are numerical outcomes of test performance. However, these are further categorized into performance levels as follows: “Below Average, Average, and Above Average”. Depending on the school year, the cut off points for the scale scores corresponding to the performance levels vary. This variety may be contributing to the slight differences seen in R^2 and beta coefficients.

Race and ethnicity. The variable race was included in the model as a stabilizing variable. However, with a coefficient of 0.05 and hefty p -value (0.703) race did not present as a salient independent predictor of TCAP scores although the majority of participants were of African American ethnicity.

Gender. The variable gender was also included as a stabilizing factor. Typically, gender differences in educational performance vary depending on the subject area and grade level. In this study gender played no significant role in predicting TCAP test performance. The direction of this factor was negative, meaning it associated more girls with lower TCAP scores; however, the coefficient was extremely small (0.04) with a large insignificant p -value of 0.753.

Parental incarceration. As the impact of parental incarceration on childhood educational performance was the premise of this study, this variable was retained in the model to determine its role in predicting TCAP performance. The resulting coefficient was small, nonsignificant, and negative, reversing the anticipated relationship between parental incarceration and low TCAP scores. However, further analyses are needed to ascertain how other variables in the model may have been interacting with this factor, particularly in light of the fact that TCAP scores averaged lower among children with an incarcerated parent. A more complete description of the sample's incarcerated parents may enable a better understanding of the role of incarceration in the problem under study as well.

Caregiver education. The factor of caregiver education did not show significance in the '07-'08 test scores, but it demonstrated strong significance in regressions using '06-'07 and '05-'06 test scores. The coefficient found for this variable ranged from 0.19 to 0.44, meaning it could play a substantial role in predicting TCAP performance.

It should be noted that in this analysis caregiver education was defined as having a high school diploma versus have a college degree. Defining education as having or not having a high school diploma

did not show associations to TCAP performance in the chi-square tests; hence, it was not included in linear regression analyses.

School mobility. Mobility showed strong significance in nearly every analysis with a coefficient ranging from 0.24 to 0.40. The direction of this variable was not expected as it associated more frequent moves among schools to better performance on test scores. In attempts to understand this, it was noted that the comparison group drove the direction and strength of this variable with a higher number of moves than the experimental group. The comparison group moved nearly 1.6 times more often than the experimental group. In fact, when isolating cases to those of the experimental group, this factor fell out of the model. The comparison group contained the participants never experiencing parental incarceration and possibly demonstrating better school performance. Hence, with this variable, a connection was seen between better school performance with a greater number of moves among schools.

Annual household income. Even within a low socioeconomic status population, low income stood out as a significant predictor of poor TCAP performance. Coefficients for this variable ranged from 0.15 to 0.37, meaning annual household income could explain between 15% to 37% of the variance in TCAP scores.

Relevance to the Literature

Prior research can be found to support, explain, and even contradict this current project's results. Unfortunately, insufficient research exists investigating the comprehensive effects of parental incarceration on children. This lack of research prevents a thorough comparison of this study's results to the findings of prior research. However, the literature is replete with recommendations supporting on-going research and investigation to more fully comprehend the impact of parental incarceration on children's school performance.

Race and ethnicity. Historically, race and ethnicity has been considered an important factor in determining or understanding cognitive performance (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997). Many researchers write of a persisting gap between the educational achievements of minority versus nonminority children (Lipman, 2004). Norman, Ault, Bentz, and Meskimen (2001) conclude that the placement of minority populations in urban low-income areas with underperforming schools is a primary reason for the achievement gap between Blacks and Whites in the U.S. Consequentially, this variable was expected to have an impact. Furthermore, black children are 7.5 times more likely than white children to be affected by parental incarceration (Glaze & Maruschak, 2008). However, race and ethnicity did not play a significant role in predicting school performance. This finding is supported by other research on children with incarcerated parents. Poehlmann (2005) also did not find ethnicity to significantly predict developmental outcomes in children of incarcerated mothers.

Gender. Numerous studies over the years have provided a number of conclusions regarding the differences in school performance between males and females. A review of these studies by Hyde, Fennema, and Lamon (1990) revealed the variety in these outcomes. In one study, females outperformed males in elementary grades; in another study, males outperformed females in mathematics and sciences. Yet another study found that differences between genders only emerged in high school. However, more recently in 1990 Hyde et al. found no significant differences in cognitive performance of females and males within elementary and middle school grades. Within African American populations, which characterized a majority of Hyde et al.'s study sample, no gender difference was seen in mathematic performance. This study showed no significant differences between genders as well.

Parental incarceration. Stated previously in the discussion of findings for Research Question 1 is the fact that the comparisons of study findings to the literature are extremely limited in that few

empirical studies of the academic performance of children with incarcerated parents have been published. Stanton's 1980 study was the closest comparison found, yet all of her participants experienced parental incarceration as defined in this research project. Still, her study and a number of reports based on observation assert that parental incarceration plays a role in hindering positive school performance among children.

Caregiver education. Researchers have long believed that a parent's education influences the amount and quality of time and resources a parent will invest in his or her children's development. This is believed to play a key role in the children's eventual educational attainment (Haverman & Wolfe, 1995). A number of studies have linked a parent's educational level and children's educational attainment (McWhirter, Larson, & Daniels, 1996). Haveman and Wolfe's study also recognized a greater difference in findings when making a distinction between high school completion or early college education versus higher education beyond a 4-year college degree.

School mobility. Prior research on school mobility has shown mixed findings regarding its impact on school performance. As stated in the literature review, Demie (2002) found a significant positive association between the length spent at one school and academic performance. However, Demie also recognized that at a few schools this trend was reversed – some schools had students of high mobility performing well. Demie suggested that these schools may have been equipped to address the challenges placed on children by a high rate of mobility. Prior research also asserts that controlling for other variables can erase the negative impact of school mobility (Rumberger, 2002). Hence, the proper controls may not have been in place for the present study, leading to the outcomes observed regarding school mobility. Rumberger reports that changes in schools are often treated as an unwelcomed factor that happens to affect school performance; however, in some cases, school mobility may actually be the intervention used to address academic concerns; hence, an association between mobility and better

school performance may be observed among these students (Rumberger, 2002; Temple & Reynolds, 1999).

Annual household income. Poverty has an intricate and complex impact on child development and learning. Extracting linear correlations between poverty and developmental or learning outcomes is difficult as poverty seems to show “selective effects” on children’s outcomes (Duncan & Brooks-Gunn, 2000).

There are a number of factors impacting the study sample that could be attributed to other circumstances aside from parental incarceration. Through an in-depth review of statistics and literature, Brooks-Gunn and Duncan (1997) compared children living in households at or under the poverty level with children in households above poverty. They summarized the following information: Children in poverty reported repeating a grade, dropping out of high school as well as being expelled or suspended two times more often than children living above poverty. Children in poverty report a developmental delay and learning disability 1.3 and 1.4 times more often than nonpoverty children, respectively. They reported an emotional or behavioral problem 1.3 times more often, reported child abuse or neglect 6.8 times more often, and experienced violent crimes 2.1 times more often than nonpoverty level children. Researchers debate whether these outcomes are attributable solely to income; some debate that these outcomes may be attributed to other factors in conjunction with poverty such as family stability, neighborhood environment, personal character traits, and genetic traits (Brooks-Gunn & Duncan, 1997; Mayer, 1997). Ackerman, Kogos, Youngstrom, Schoff, and Izard (1999) studied family instability as defined as “residential mobility, the number of intimate adult relationships involving the primary caregiver, the number of families with whom the child has lived, serious childhood illness, and other recent negative life events” (p. 258). The latter could easily include parental incarceration. They found

that substantial levels of instability led to differing behavioral outcomes (internalized and externalized) despite a number of family and economic variables.

The issue of poverty is crucial as income has long been positively and significantly correlated with children's educational attainment (Haverman & Wolfe, 1995). Crosnoe, Mistry, and Elder (2002) detected a "demoralizing" effect by low socioeconomic status on delaying educational progress. Parents of low SES were more reluctant to engage in their child's educational progress due to the discouragement they felt from having insufficient financial means. Additionally, use of income derived from welfare has shown a significant negative impact on educational attainment (Hill & Duncan, 1987). Early studies on families and children's subsequent success also indicate a relationship between family background measured as parents' line of work or educational status and children's subsequent occupation or level of income (Haverman & Wolfe, 1995).

The prevalence of poverty in this study sample is important considering that persistently very low income levels have a particular impact on elementary school outcomes (Brooks-Gunn & Duncan, 1997). A significant association (with a coefficient of 0.70) between income levels and children's cognitive abilities has been detected by Linver, Brooks-Gunn, and Kohen (2002) even when controlling for other "mediators". The first group of mediators analyzed included maternal emotional distress and parenting practices, which did not substantially impact findings. However, incorporating a stimulating home environment as a mediating factor reduced the coefficient from 0.70 to 0.36. This same study detected correlations between income and behavioral outcomes in children as well. All confounding variables assessed previously were found to play important roles in predicting behavioral outcomes some of which completely mediated the association between income and behavior. These studies emphasize the immense problem presented by poverty for children in the United States. They also reaffirm that the issues surrounding parental incarceration and poverty are nearly indistinguishable.

Major Findings

Trends in TCAP Performance

The trend in TCAP performance observed in this study merits further investigation. Although the linear regression did not support the incarceration variable, *t-tests* of TCAP scores showed an difference in the mean scores of children with incarcerated parents versus those without. A previous study by Stanton (1980) found significantly lower level of academic performance among children whose mothers were in jail when comparing with children with mothers on probation. The sample used in this study differs from the current study, preventing conclusive comparisons; however, further work by Stanton teased out different factors involved in incarceration to ascertain which variables made the most impact. She found that a parent's prior criminal record and socioeconomic status predicted 40% of the variance in her study population's academic performance. The parent's current incarceration predicted only 8% of the variance. This information is very important considering the current recidivism rates in the United States and Tennessee. In 2005, the most recent recidivism rates in the state of Tennessee revealed a 21% failure rate within 1 year, a 35% failure rate within 2 years, and a 42% failure rate within 3 years for convicted felons (Tennessee Department of Corrections, 2005). This means that a large proportion of offenders including incarcerated parents are unable to successfully reintegrate into society following their release; a return to criminal activity or a probation or parole violation puts them back into prison or jail. Hence, a large number of the present study's participants show academic performance that is not only impacted by the parent's current incarceration but likely reflect a prior involvement in the criminal justice system as well. At least 32% of the entire sample experienced multiple incarcerations (not including life-long incarceration) of a parent; however, this estimate is probably low considering that the "comparison" group was not given the opportunity to specify the extent of parental incarceration they had experienced.

The effect of selection bias could have led to an underestimation of the true impact of parental incarceration on school performance as the participants self-selected into this study. Poehlmann (2005) found that individuals who opted out of her study had a greater incidence of prior incarceration. It is possible that the children of the most at-risk families were not involved in the current study, resulting in an elevated baseline of TCAP performance among children of incarcerated parents. Furthermore, those caregivers more invested in the children's educational progress may have participated in this project at greater rates than caregivers with less investment and a child with a caregiver more invested in his or her education may perform at higher levels in school. Thus, the sample involved in this study may have had more optimal TCAP scores than the general population of children with incarcerated parents.

Caregiver Education

This study revealed that children experiencing parental incarceration were nearly four times more likely to be under the care of a caregiver with less than a high school degree when compared to children without an incarcerated parent. However, current literature on child development reveals that an appropriate home environment may compensate for the low education level of caregivers. This information provides two potential venues for intervention: increasing the education level of caregivers or enabling caregivers to create optimal learning environments inside the home.

The Strength of Socioeconomic Status

The findings of this study suggest that the TCAPs demonstrate sensitivity to the annual household income levels of TN students. Other studies also point to poorer achievement test performance by populations in poverty; however, none of these studies specifically analyze the TCAP. The state of Tennessee has not conducted any testing to evaluate the test's sensitivity to certain environmental factors such as poverty (L. Atkins, Associate Director – Elementary and Secondary Programs, TN Dept. of Education, personal communication, July 2, 2009). Still, a plethora of previous

research suggests that “the effects of poverty remain the most significant sociocultural cause of the academic achievement gap” (Talbert-Johnson, 2004, p. 24).

Essentially, several traits are observed among families affected by incarceration that are also identified among families in poverty. Ultimately, these families are seen as one of the same: it is possible that families in poverty are disproportionately impacted by incarceration and vice versa. What remains is the idea that the process of incarceration allows us to identify extremely vulnerable families in poverty the majority of whom will suddenly become more open to assistance and intervention upon the arrest of a family member particularly if that family member is a parent.

Theoretical Application of Study Findings

The intent of this study was not to develop a theoretical model predicting educational performance but simply to begin an investigation of factors present due to parental incarceration that may impact educational performance. The development of an exact model is far beyond the scope of this study. Rather, this research is simply a reaction to the lack of literature regarding the academic performance of children impacted by the specific occurrence of parental incarceration.

The use of Bronfenbrenner’s Ecological Systems Theory demonstrates how future research could apply appropriate theoretical models incorporating a dynamic multisystemic, multilevel approach in understanding children’s developmental outcomes. With an extensive understanding of current literature as well as real-time comprehension of the community status-quo through on-going conversations with and observations of families impacted by parental incarceration, perhaps this study provided greater clarity regarding how future researchers should consider systemic interactions in ensuring adequate assessment of current performance and support needed for optimal academic performance.

This study provided a snapshot of the macrosystemic impact of today's state and national incarceration laws on children whose parents become inmates. These findings validate further investigation of the academic performance of children with incarcerated parents compared to those without to confirm differences suggested by this study's findings. Incorporating a temporal aspect further builds on the Ecological Systems Theory approach and would inform the debate regarding the impact of parental incarceration on child development at different ages as it is related to a child's educational performance.

Limitations

A primary limitation of this study is that the sample under investigation was drawn from a traditionally "invisible" population. With the negative attributes ascribed to incarceration by society, the stigma and shame connected with incarceration often keep offenders and their families from being fully understood, studied, or represented in decisions affecting their well-being. This "invisible" status is also used by this population to protect themselves from the scrutiny of the public. As a result, there is limited access to samples of children with incarcerated parents of sizes large enough to ascertain the statistical significance of the problems under investigation. The difficulties in sampling this population are evident in the small sample sizes that typify existing studies on children of incarcerated parents. Consequently, it is difficult to fully assess and understand the impact of incarceration and sentencing laws on individuals, families, children, and communities. In order to overcome this issue within this study and maximize the number of children under study, a truly experimental study design was foregone in favor of studying a convenience sample of children of incarcerated parents who self-selected inclusion into this sample.

Hence, this study involved a cross-sectional study design, limiting the assessment of incarceration impacts on family processes and children over time. Furthermore, the study begins on the

premise that each individual participant would be the unit of analysis. Both independent and dependent school data were collected on an individual basis where each child may reflect differences in reactions to parental incarceration. However, the data collected from siblings within several families potentially increased the risk of consanguinity within the study's findings.

A number of issues are identified as contributors to the lack of data needed to answer Research Question 2. The survey tool performed weakly in garnering the desired information; probing questions to enable the researcher to collect the information elsewhere were not included on the survey. For example, the length of parental incarceration was not gathered because many caregivers were unable to provide the dates of the parent's incarceration, which was crucial in answering Research Question 2. Additionally, the survey did not ask for the names of incarcerated parents and their locations in order to access their incarceration histories available on a public online database. A pilot study of the survey tool used would have revealed weaknesses in the survey regarding collecting information on the individual basis and would have indicated areas for editing word usage to more clearly convey each request. Responses to surveys were largely completed independently and mailed to the researcher, allowing for misinterpretations of the survey questions. A lack of uniform responses weakened data analysis efforts. The use of face-to-face interviews may better assist in obtaining the desired information.

Another limitation was that an individual index for comparison of school performance did not exist in the field of education or elsewhere. In order to fully appraise the performance of children in an objective manner, an index should be created. For replications of this study, such an index would need to account for confounding variables related to living in at-risk environments that may impact a child's school performance.

Secondary data in the form of school reports were provided from a state-wide database; however, variations in school reporting of data caused information to be missing in several areas of

interest including annual Grade Point Averages and attendance. The most consistent information was provided for the annual TCAPs, leading to its use as the dependent variable in this study's many analyses. Still, TCAP scores were also irregularly reported and missing in certain years for many students. Stanton (1980) also encountered this problem when assessing school progress of children of prisoners, reporting a disjointed reporting of data for participants involved in her study. Data were obtained through a contact within the school district where all the participants' schools were located. Understandably, a lengthy process was in place for obtaining this information.

The generalizability of this study's findings is limited due to the specifications of the study population. Participants were children who are identified as "at-risk" or "disadvantaged" according to social or socioeconomic standards located in a southern urban region of the United States. And, as is true with a majority of the research conducted in this area of study, a larger sample size is needed to truly extricate the impacts of parental incarceration on children.

The findings of this study are also limited by the fact that the sample was selected for their family's participation in mentoring programming designed to address substantial needs present in their lives. The relational and educational support potentially provided by mentors could have improved school performance and other outcomes in these children. These mentors may have been a source of resource linkage to other community assets that may have contributed to improved school performance. This may have diminished the effect of the parent's incarceration on that child's school performance; however, some control for mentoring was applied in the use of a comparison group of similar at-risk children with mentors. Still, this circumstance must be taken into account when applying the findings of this study to the general population of children of incarcerated parents.

Other factors beyond the scope of this study including the difference in response to parental incarceration observed in boys compared to girls could have confounded its findings. The ages of the

children involved ranging from early elementary through middle school could also have led to mixed responses if the effects of parental incarceration vary by the child's age or developmental phase.

This study did not control for the possible differences in the impact of parental incarceration according to which parent was imprisoned. A replication of this study targeting the impact of either maternal or paternal incarceration could potentially lead to different findings particularly regarding the dynamics involving the child's caregiver. No control was exerted over the potential influence of the parent's criminality either. It is possible that a conviction for different types of crime could have differing impacts on offspring. Additionally, this study was inclusive in its definition of parental incarceration by allowing a 1-night or 1-week jail stay to denote "incarceration"; however, parole and probation were not included in the definition. A more restricted definition of incarceration could lead to greater clarity in extracting the implications of parental incarceration on children's education.

The role of IQ was not considered in this study and may merit consideration in future assessments of the school performance of children of incarcerated parents. The impact of special education in the lives of these children was not assessed either, as this measure was not uniformly reported by all schools involved. Future studies should be conducted to better understand the number of children with incarcerated parents enrolled in special education classes and how their progress is impacted by these intervention efforts.

Applying Findings to Practice

Some states, such as the state of Arizona, have legislated or are working toward incorporating a set of "Bill of Rights" for children of incarcerated parents developed by the San Francisco Children of Incarcerated Parents Partnership within their state policies and programming. The findings of this study do highlight the need to incorporate three of these "rights" in policies and actions for children of incarcerated parents in the state of Tennessee, as follows:

- I have the right to be well cared for in my parent's absence.
- I have the right to support as I face my parent's incarceration.
- I have the right not to be judged, blamed, or labeled because my parent is incarcerated.

The "Bill of Rights" agenda states that part of caring for these children involves "supporting their caretakers" and supporting these children involves "train[ing] adults who work with young people to recognize the needs and concerns of [the] children" as well as "provid[ing] access to specially trained therapists, counselors, and/or mentors" (San Francisco Children of Incarcerated Parents Partnership, 2005, p.1).

Multisystemic Approach

This study bolsters the argument that the different societal systems can no longer act independently but must consider the impact they have on each other. Specifically, the systems of criminal justice and corrections function under policies and procedures that impact our educational systems and vice versa. Our educational systems should consider the impact of criminal justice and corrections on its students before generalizing educational policies and procedures to the entire student body. As stated by Johnson (2008), "the interactions among multiple layers of the complex system that comprises the ecological context of a school could result in any number of unforeseen outcomes, and seemingly small changes or fluctuations in one system layer can potentially have far-reaching consequences resulting in larger impacts in other systems layers" (p. 7). Hence, the information from this study helps us realize the need to promote service integration that reaches across systemic boundaries to "ensure that individuals do not 'fall through the cracks' formed by the boundaries of various institutional domains and service providers" (Rossman, 2001, p. 2).

This study has demonstrated the complexities between incarceration and poverty that cannot be extricated within the confines of this study. Yet, what is evident is a venue through which an intervention should be applied using an intersystemic, interdisciplinary approach. Klein, Bartholomew, and Hibbert (2002) suggest that a systemic approach in rehabilitation of families and social organization would be more effective than current methods that target individuals. With the intake of a parent into the criminal justice system, families and children of high risk are identifiable and should be recognized for a supportive intervention involving in-home services to address development, health, and education as well as provide linkage to community resources. This process would involve a wide spectrum of agencies and organizations collaborating in the intake, sentencing, incarceration, reentry, family support, education, and healthcare of offenders and their families.

Although today's systems (the education system, the criminal justice system, juvenile justice system, and so forth) are quite fragmented (Rossman, 2001), awareness is growing of the cost-benefit, increased efficiency, decrease in duplication of services, and improved knowledge resulting from collaborating across different disciplines. As a result, current efforts point toward an increasingly inter-systemic approach to gathering data, evaluating of programming, and developing solutions for societal problems.

In-Home Interventions

Findings from this study most readily support interventions targeting the caregivers of children experiencing parental incarceration. Several other studies including Hanlon, Blatchley, et al. (2005) support engaging the caregivers as an effective indirect method of improving the conditions and educational outcomes of these children.

Caregivers should be identified in order to correct the disadvantages children under their care may experience due to their own levels of educational attainment. One solution could provide an

opportunity for these caregivers to increase their own educational attainment through access to GED classes with childcare provided. A broader educational intervention could involve providing classes to the caregivers while simultaneously providing a tutoring service to their children instead of simply providing childcare. These tutoring sessions could help students improve in subjects of low performance, assist with completion of homework assignments, or could target a specific educational topic.

As discussed previously, the low education level of caregivers may be offset by the provision of an engaging, inspiring, safe environment within the home. Therefore, an alternative intervention could be designed to increase caregivers' awareness of this fact while also teaching skills and providing resources for achieving it. Intervention implementers could work with caregivers inside their homes to discuss strategies for creating the ideal environment and to provide resource linkage to community resources that will provide the materials or skills needed. Work could also be accomplished with incarcerated parents who are anticipating a return into homes with their children so that they will know how to contribute in providing the safe, stimulating environment needed for their children to excel in their academics.

Implications for the Education System

Interventions within the school systems would be complex considering the pressures already placed on teachers and school systems by federal and state policies. However, addressing the needs of vulnerable populations could help these schools raise their overall scores, especially those with a large proportion of students who are at-risk or of low socioeconomic status. Vacca (2008a) wrote the following regarding students in the foster care system; however, it could be applicable for all students in poverty and other vulnerable situations, such as parental incarceration: "School personnel must develop a deeper understanding of the challenge of transforming their schools into caring and cohesive

institutions that focus on helping every student succeed” (p. 1081). The information from this study may be particularly important for school staff and teachers who interact with these students on a daily basis as well as officials responsible for developing and implementing policies affecting this vulnerable population. Adjustments to typical strategies for addressing school performance issues such as special education placement, grade retention, and typical classroom management tactics should be reconsidered in light of these findings.

Personalized prevention services. Correcting the problems resulting from poorly developed policy requires costly intensive individualized interventions. However, the cost of early intervention would undoubtedly be off-set by the savings incurred due to reduced crime and fewer incarcerations. The idea of providing individualized supportive services to children of incarcerated parents is supported by previous research such as that by Hanlon, Blatchley, et al. (2005).

The first step in providing personalized support to children affected by the incarceration of a parent requires an intersystemic effort to identify these children upon the intake of their parents into the criminal justice system using sensitive, confidential methods.

A number of methods already in use could be modified to provide individualized supportive services to children with incarcerated parents. Students showing behavioral or emotional disorders with or without learning difficulties should be assessed for their eligibility for special education services. If the students do not have a disability sufficient to qualify for special education services, yet they have a parent who is incarcerated, they should still be allowed to access these services. The Individualized Education Program (IEP) developed for these children could allow for additional attention and special services that may enable these children to overcome any academic disadvantage due to having a parent incarcerated as well as due to having a caregiver of low educational attainment and participation in the children’s educational experience. One of the advantages of the use of the IEP is that a team is

convened to plan and execute the plan developed as part of the IEP. This team includes the following individuals: the child's parent(s), one special education educator, one regular educator, one public agency representative, another representative with a valid interest in the child's progress, and the child. Modifications of this concept could allow for the inclusion of professionals in pertinent fields in order to incorporate a holistic approach in addressing the needs of the child including a physician, an educator, a clerical representative, and a social worker (Murray et al., 2007). This could ensure that all the potential areas of need in the lives of children with incarcerated parents are assessed and addressed, hopefully reversing any adverse impacts and propelling the child toward a productive, fulfilling adolescence and adulthood.

Current IEPs are structured to include the following components: current academic and functional performance, annual academic and functional goals, period reports, and a "statement of the special education and related services and supplementary aids and services (based on peer-reviewed research as possible) to be provided to the child" (National Dissemination Center for Children with Disabilities, 2004). Additional services to be provided could include case management where a social worker trained specifically in issues surrounding incarceration provides inside-school supportive services addressing needs identified through a battery of psychological, physical, educational, and health needs assessments. The social worker could also serve as a liaison between the school and the child's home if problems stemming from home needs are identified. School psychologists should also be on hand to provide clinical services during school hours. Current use of this type of intervention in North Carolina is seen to have positive impacts on student's attitudes and learning according to teacher observations; it is not viewed as a negative disruption to class-time activities due to the positive benefits seen on the children's mental and behavioral well-being (A. Neal, personal communication, March 30, 2009).

Continuing education for current education personnel. Making schools and all involved personnel aware of the trend that children of incarcerated parents average lower on standardized tests such as the TCAP could help them work with the problems instead of struggling against them. When teachers and counselors are better able to understand the possible impacts of incarceration on their students, they may have learning strategies and activities to help these children better overcome their difficulties (Talbert-Johnson, 2004). However, any intervention would have to stress the importance of confidentiality – all children have a right to keep a parent’s incarceration private to avoid any stigmatization that might take place. A proper intervention would also address possible tendencies of school staff to stigmatize these children even if it is done unknowingly (Talbert-Johnson, 2004).

Increased societal and cultural training for new education personnel. A more effective approach to educating school personnel about the needs of children impacted by poverty or incarceration issues is to incorporate this training in the formal education process. Educational institutions offering undergraduate, masters, or doctoral degrees in education, educational leadership, and other education related fields should require coursework that ties in a social work approach involving the perspectives and theories of social work to understanding societal impacts on student learning, school performance, and academic outcomes. However, this should not be attempted through the use of one or two classes but instead through an education permeated with teachings and experiences addressing socioeconomic and societal (including incarceration) factors impacting today’s students (Talbert-Johnson, 2004). Ideally, professionals in other fields should be engaged in providing this information and in seeking possible solutions. By embracing an interdisciplinary approach, educators and education leaders will be poised to address problems within an increasingly intersystemic framework.

Revisit TCAP development. Research on TCAP testing is scant. The TCAP is a state-normed, criterion-referenced test based on curriculum standards developed by the TN Department of Education

that are available online at <http://tennessee.gov/education/curriculum.shtml>. It is not nationally normed nor has it been rigorously evaluated for validity or reliability (L. Atkins, Associate Director – Elementary and Secondary Programs, TN Dept. of Education, personal communication, July 2, 2009).

In light of this study's findings, the state of Tennessee may want to consider rigorously evaluating its testing system in order to ensure the test can truly reflect the performance of its students. Annual household income was found to explain 15% to 37% of the variance in TCAP scores. Tennessee officials may want to conduct additional studies to ensure greater control over potential bias exerted by household income over TCAP test results.

Policy Implications

The findings of this study underscore the importance of current efforts in Tennessee to support children of incarcerated parents in this state. The Tennessee Legislative Assembly passed a mandate in 2007 instructing the Department of Corrections to initiate a process of developing a statewide strategic plan to address the needs of children of incarcerated parents. This process is just in its initial phases and the results of this study could inform the process by emphasizing the need for providing academic support and attention to the children's caregivers. Many other states, including the states of Washington, Oregon, Ohio, Vermont, Arizona, and Wyoming, are passing similar legislative resolutions to ensure children of incarcerated parents are not adversely impacted by their parents' incarceration. Moving forward with current mandates will enable Tennessee to ensure the "Bill of Rights" for children of incarcerated parent is being protected for this vulnerable population. However, further policy development is needed to assist in this process.

The state of Washington has passed legislation calling for the formation of an interdisciplinary committee to oversee the review of current policies as well as form goals and recommendations for further addressing the needs of children of incarcerated parents. The supervisor of public instruction

was specifically instructed to ensure policies support children of incarcerated parents in order to “facilitate normal child development, including maintaining adequate academic progress, while reducing intergenerational incarceration” (Engrossed Second Substitute House Bill 1422, 2007). The findings of this study fully support that this type of policy development should be emulated in the state of Tennessee. By recognizing this vulnerable population in state legislation, their needs are validated and more ensured of being addressed.

The findings of this research support the following to be considered in additional future policy development: 1) the multisystemic nature of today’s societal problems, 2) incarceration and the family structure, 3) caregiver education levels, and 4) the economic impact of incarceration and poverty. Translating these findings into policy will require that policymakers understand the research, expand on the direct and indirect implications of these findings, and mandate investments in preventative measures to avoid more costly repercussions in the future. The findings of this project should be applied along with other current and emerging research on early childhood development, 21st century educational approaches, and environmental contexts to shape policies that emphasize prevention and lead to positive health, educational, and societal outcomes. Policies influenced by these findings could include crime-prevention measures, education policies, welfare laws, and family support policies.

In order to inform policymakers of this information and the need to implement it in policy, strategies for creating dialogue between lawmakers and researchers should be pursued. Information briefs should be created and disseminated at one-on-one meetings as well as roundtables of policymakers and other key stakeholders where issues and possible solutions can be discussed. This information could also be shared with the academic community and professionals at conferences and in publications.

The multisystemic nature of today's societal problems. Use of the Ecological Systems Theory to structure this research provides an illustration of how an intersystemic effort must be made to support students and caregivers during a parent's incarceration. Future policymaking efforts should reflect the multisystemic nature of today's issues. Resulting policy should involve all affected departments and agencies so that they increase collaboration and sharing of information to ensure comprehensive care for vulnerable families. Certain departments may benefit from some restructuring of programs to reduce duplication of services, close gaps in service delivery, and ensure optimal use of tax dollars. Ultimately, following a more ecological framework will require that the various systems involved in education, corrections, and child welfare work more closely to address interrelated issues.

Incarceration and the family structure. The findings of this study reflect current trends in family dynamics when a parent is incarcerated. For the most part, this study's findings are similar to national trends; however, this study did not confirm expectations regarding how children change caregivers due to a parent's incarceration. This information is important particularly for judges making decisions about sentencing and child welfare personnel. When crafting future regulations and legislation, policymakers should account for the potential short- and long-term impacts on the family structure and organization of communities.

Caregiver education levels. This research highlights the need to formulate policies to increase support to caregivers providing care for children with incarcerated parents. Through legislation and mandates for additional support, the needs of caregivers and the children under their care should be recognized and addressed.

The economic impact of incarceration and poverty. This research shows that the cycles of incarceration and poverty are intertwined, and other studies indicate that incarceration and poverty have bidirectional and synergistic relationships. However, current policymakers continue to push

incarceration and welfare policies that reflect their ignorance of this information and exacerbate the economic impact of these issues. Future policies and funding mandates should reflect a deeper understanding that families affected by incarceration and families affected by poverty are often the same family. Attempts to help “disadvantaged” or vulnerable families will impact families affected by incarceration.

Conclusion

Vacca (2008a) asked the following three questions about the education system that need to be asked through the consideration of the impacts of parental incarceration:

1. What is currently known about the achievement of [children of incarcerated parents]?
2. What can schools do to help improve the achievement of [children of incarcerated parents]?
3. What can be concluded about how schools can help [children of incarcerated parents] improve their overall achievement?

By providing information about their TCAP performance, this study has endeavored to provide another piece of knowledge in response to Research Question 1. The findings do not go so far to ascribe causality to the variables studied, but they do add to the current description of children with incarcerated parents by warning of possible lower academic performance among this vulnerable population. The evidence is not conclusive; however, it does warrant further study. This study also provides a framework for additional study on this population of children with a few modification and additions recommended. Ideas for school intervention have been drafted in response to the findings derived for Research Question 3. Many of these ideas are based on current efforts with modifications made to address the particular issues associated with parental incarceration.

Finally, the findings of this study provide overwhelming evidence of the entanglement of issues of poverty and incarceration within this nation. Additional study must be accomplished to enable effective solutions which consider the nuances of vulnerable populations caught up in cycles of incarceration and poverty.

Directions for Future Research

1. Replicate current research study in other locations.

How parental incarceration could impact a child's school performance is a complex issue involving a number of social, intrapersonal, and interpersonal variables. A considerable amount of continued research is necessary to more fully understand the implications of parental incarceration and a child's subsequent school performance. This study should be replicated on a larger scale in other urban and rural locations around the United States and the world in order to better assess the specific effect of parental incarceration on the factors analyzed.

2. Replicate current research study using other clearly defined units of analysis.

A replication of this study should limit participation to one participant per family unit in order to reduce the impact of consanguinity on findings. However, a broader perspective could be employed by involving the entire family or even community as a unit of analysis. Adjusting the unit of analysis could provide a greater understanding of how parental incarceration affects educational performance on a number of different levels.

The use of an ecological perspective as the framework for this study can add ambiguity to a study's scope if the intended unit of analysis is not rigorously observed. Researchers must also realize that predictors for TCAP performance can be found on a number of different levels – on an individual basis, within a family, and on an environmental level (Welsh & Farrington, 2007). Prior to beginning a

study, researchers must decide their unit of analysis and only draw conclusions within this scope. Endeavoring to pull factors from several different levels at once will provide confusing results.

3. Employ an effective yet appropriate data collection strategy.

Extricating information about the many variables studied should involve a number of different strategies to ensure the data are collected. An understandable and effective survey tool should be used with the participants and caregivers to gather what knowledge they have about the time of the parent's incarceration. However, data collection efforts may also be more fruitful if researchers administer the survey in person as opposed to simply mailing the forms for caregivers to complete on their own. Having the researcher or a designee available to respond to questions about the survey and review responses could ensure that the desired information is obtained.

4. Access criminal records for data on the timeframe of parents' incarcerations.

The survey instrument should also gather the identifying information needed to obtain the parent's criminal records from the state. Many states have online criminal record databases so that the time frame of an offender's incarceration can be accessed online provided that the researcher have appropriate identifying information (such as name, date of birth, and so forth). Researchers will need to investigate how to access criminal records within the state they are conducting research; then, they will need to determine how to obtain the needed information from their study population to access these records. The collection of this secondary data is essential for answering questions regarding the timing of parental incarceration on school performance.

5. Investigate other measures of school performance.

Future studies should investigate other school related factors such as annual Grade Point Averages and attendance as the dependent variable for potential significant differences among children

with an incarcerated parent. The TCAP as a dependent variable should be studied further in replications of this study; however, other annual testing systems beside the TCAP should be investigated as the dependent variable as well.

Developing a relationship with officials within school systems may help in the process of obtaining school data. Some school districts have a formal process for requesting access to information; the time needed to obtain data from these school systems should be taken into consideration.

6. Discern differences due to gender and age of child and parent.

Children are documented to react to different stressors based on their gender. Additional studies could distinguish between the reaction of male and female students to parental incarceration. Furthermore, the effect on school performance could be assessed according to gender of the incarcerated parent – how having a father, mother, or both parents incarcerated may impact a child's school performance differently.

Parental incarceration may also have differing impacts depending on the age of the child and the child's developmental progress. It is important to investigate these impacts to understand whether parental incarceration during elementary versus middle school years has a differing effect. The information obtained from this research could inform educators, judges, and social workers if there is a time in life during which children show a more adverse response academically to parental incarceration.

7. Modify the definition of incarceration and explore the relationship of the parent's criminality.

This research project used a very inclusive definition of incarceration. One night in jail was enough to qualify a participant for participation in the "experimental" group. Future studies should attempt to understand the issue using more limited definition of incarceration to control for differing

impacts of long-term incarceration, probation sentences, and multiple incarcerations throughout a child's life.

Another aspect to investigate is the effect of parental criminality on a child's school performance. It is likely that the nature of the offense leading to conviction, such as violent, property, or "white-collar" offenses, could result in differing educational outcomes.

8. Apply a systemic approach.

With the advance of technology, it is becoming increasingly possible to study more complex systems. This technology needs to be applied in researching the systemic implications of incarceration on societal outcomes, offender outcomes, and offender offspring outcomes in order to create effective solutions. An improvement of this study should employ a data collection tool that will gather information on a more interpersonal level for each participant; ideally, a set of standardized survey tools could be identified for data collection purposes. Information about parental incarceration such as the parent's prison records should be gathered from secondary data sources.

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APPENDIXES

Appendix A: Data Collection Instruments

July 21, 2008

Dear Parent or Caregiver,

My name is Melissa Neal. I am working at Big Brothers Big Sisters as an intern and am also a graduate student at East Tennessee State University. I am researching how having a parent in prison or jail affects children and will be studying children who are matched in the Big Brothers Big Sisters programs. Over 2 million children in the United States have at least one parent in prison or in jail. Many of us know the sad effect this is having on many children in our communities, even in our families.

The goal of this study is to see how having a parent in jail or in prison may affect a child's grades, test scores, and other school activities. In order to do this, I will need to review the school records of 100 children with a parent in prison or jail. I understand that your child is matched in the BB/BS Amachi mentoring program. Would you be willing to let your child be a part of this study?

I hope you will help us with this study. All that is involved is the following:

- Sign the enclosed consent form which will give me permission to look at your child's school records and collect the information needed for this study.
- Complete the 13-question survey enclosed.
- Return both the consent form and the survey in the stamped return envelope provided.

In turn for your help, I would like to give your child a backpack filled with school supplies!! You and your child will be invited to a "Cool School Year Kick-Off" event with food, games, and the free backpacks!

In order to protect the privacy of all children in this study, only I and BB/BS staff, will know who has been asked to participate in this study. Also, once the school records have been reviewed, the information I collect will be coded and all names will be erased. No one will be able to identify the children once the codes are assigned as I collect information from the school records.

Letting your child's records to be a part of this study could help us in understand exactly how having a parent in prison or jail impacts many children in our communities and families. This study could help us give more powerful arguments to government and community agencies in getting greater support for families of prisoners.

Please do not hesitate to call me at (828) 244-0739 or Rachel at Big Brothers Big Sisters at (615) 329-9191, extension 202, if you have any questions.

Thank you very much for your time!

Sincerely,

Melissa Neal

July 21, 2008

Dear Parent or Caregiver,

My name is Melissa Neal. I am working at Big Brothers Big Sisters as an intern and am also a graduate student at East Tennessee State University. I am researching how having a parent in prison or jail affects children and will be studying children who are matched in the Big Brothers Big Sisters programs.

The goal of this study is to see how having a parent in jail or in prison may affect a child's grades, test scores, and other school activities. This means that I will need permission to collect information from children's school records. In order to having a meaningful understanding of how children are doing in school when a parent is incarcerated, I will need to see how children without a parent in prison are doing in school. I know your child is matched in the BB/BS mentoring program and does not have an incarcerated parent. Would you be willing to let your child be a part of this study?

I hope you will help us with this study. All that is involved is the following:

- Sign the enclosed consent form which will give me permission to look at your child's school records and collect the information needed for this study.
- Complete the 12-question survey enclosed.
- Return both the consent form and the survey in the stamped return envelope provided.

In turn for your help, I would like to give your child a backpack filled with school supplies!! You and your child will be invited to a "Cool School Year Kick-Off" event with food, games, and the free backpacks!

In order to protect the privacy of all children in this study, only I and BB/BS staff, will know who has been asked to participate in this study. Also, once the school records have been reviewed, the information I collect will be coded and all names will be erased. No one will be able to identify the children once the codes are assigned as I collect information from the school records.

Letting your child's records to be a part of this study could help us in understand exactly how having a parent in prison or jail impacts many children in our communities and families. This study could help us give more powerful arguments to government and community agencies in getting greater support for families of prisoners.

Please do not hesitate to call me at (828) 244-0739 or Rachel at Big Brothers Big Sisters at (615) 329-9191, extension 202, if you have any questions.

Thank you very much for your time!

Sincerely,

Melissa Neal

A photograph of two children, a girl in a blue patterned shirt and a boy in a red patterned shirt, sitting at a table and making cookies. They are using metal cookie cutters to press shapes into a large sheet of dough. A red bowl is visible on the left side of the table.

Please help us understand the needs of children of prisoners.

POSSIBLE BENEFITS

- **A BACKPACK WITH SUPPLIES!**

Each child involved may come to one of our four "Cool School Year Kick-Off" events and receive a backpack with school supplies!

- **ADVOCACY**

This study could help us give government and community agencies more information about what children of prisoners need!

- **BETTER EDUCATION**

Children of prisoners could get better support and services at school!

- **BETTER FAMILY SUPPORT**

Families of prisoners could receive better support from the government and from our communities!

HOW DOES HAVING A PARENT IN PRISON OR JAIL AFFECT A CHILD'S SCHOOL PERFORMANCE?

Many of us know the negative affect that having a parent in prison or jail can have on a child. Sadly, not enough research studies have been done to explain what is happening in our communities. This study will look at how having a parent in prison or jail may affect how a child does at school.

You can allow your child to be a part of this timely research study!

- All that is required:
 - Fill out the consent form and the survey
 - Mail both to BB/BS in the stamped envelope provided
- Only your child's school records will be used.
- Information from your child's school records will be coded as it is collected.
- No child will be linked to the school information once it is collected.
- All confidential paperwork will be stored in your child's records at Big Brothers / Big Sisters.

Phone Script for Contact by Phone for Potential Participants with No Response after One and Two Weeks (Experimental Group)

Caregiver name: _____

Date of call: _____

Hello, my name is Melissa Neal and I am calling from Big Brothers / Big Sisters. I sent you a packet of information last week [two weeks ago] about research I am doing to study how children of prisoners are doing at school. Did you get the packet?

Caregiver: YES NO

The reason I am calling is because I have not gotten a response. I'd like to talk with you about the project and answer any questions you may have, if you have a moment to talk. Do you have a moment?

Caregiver: YES NO

Caregiver: No –

Is there a better time I can call back?

Caregiver Response

Thank you very much for your time. Have a good day.

Caregiver: Yes –

I have worked with children of prisoners for over 2 years now and am very interested in helping kids affected by having a parent in prison or jail. I, along with many others, am seeing a family cycle of incarceration here in Nashville and across the state. So, I am doing research to help stop this problem. One thing very needed is more information about how these kids are doing at school. If we can make sure they're getting what they need at school, I think, we can make sure these kids reach their full potential.

In order to do this, I will need permission to look at school records of children that have had parents in prison or jail. Big Brothers / Big Sisters has given me permission to ask you if you and your child would be willing to be a part of this study. All that it will take is to fill out both the consent form and survey I sent in the packet. And, as a token of thanks for filling out the consent form and the survey, I will send a \$15 gift certificate to Wal-Mart to your address. Also, to protect your child's confidentiality, I will only use your child's name and information until I have been able to review their school records. Once I am able to look at their school records, the information will be coded in a way that no one will be able to identify whose records are being used.

If caregiver did not receive packet:

Would you like to be a part of this study? I'd be happy to mail you another packet.

Caregiver: Yes No

Caregiver: Yes –

Okay, let me verify your address. I have [potential participant's mailing address]. Is this correct?

Caregiver: Yes No

Caregiver: No –

What is your correct address then?

Caregiver: Gives address

Thank you! I will drop that in the mail today. This is the same address I will use to mail your gift-card once I receive your completed consent form and survey!

Caregiver: No –

Okay, thank you so much for taking the time to talk about this project with me. Please don't hesitate to call Big Brothers / Big Sisters if you have any other questions. Good bye.

If caregiver has packet:

Do you have any further questions about this study?

Caregiver Response

If you are interested in participating in this study, is there anything in your packet that is not clear?

Caregiver Response

Thank you so much for taking the time to talk about this project with me. Please don't hesitate to call me here at Big Brothers / Big Sisters if you have any other questions.

Thanks again,

Good bye

Phone Script for Contact by Phone for Potential Participants with No Response after One and Two Weeks (Comparison Group)

Caregiver name: _____

Date of call: _____

Hello, my name is Melissa Neal and I am calling from Big Brothers / Big Sisters. I sent you a packet of information last week [two weeks ago] about research I am doing to study how children of prisoners are doing at school. Did you get the packet?

Caregiver: YES NO

The reason I am calling is because I have not gotten a response. I'd like to talk with you about the project and answer any questions you may have, if you have a moment to talk. Do you have a moment?

Caregiver: YES NO

Caregiver: No –

Is there a better time I can call back?

Caregiver Response

Thank you very much for your time. Have a good day.

Caregiver: Yes –

I have worked with children of prisoners for over 2 years now and am very interested in helping kids affected by having a parent in prison or jail. I, along with many others, am seeing a family cycle of incarceration here in Nashville and across the state. So, I am doing research to help stop this problem. One thing very needed is more information about how these kids are doing at school. If we can make sure they're getting what they need at school, I think, we can make sure these kids reach their full potential.

In order to do this, I need to compare how children of prisoners are doing at school with other kids that are similar in many ways, but are different in that they do not have a parent that is incarcerated. I am wondering if your child's records could be used in the comparison group of this study. Big Brothers / Big Sisters has given me permission to ask you if you and your child would be willing to be a part of this study. All that it will take is to fill out both the consent form and survey I sent in the packet. And, as a token of thanks for filling out the consent form and the survey, I will send a \$15 gift certificate to Wal-Mart to your address. Also, to protect your child's confidentiality, I will only use your child's name and information until I have been able to review their school records. Once I am able to look at their school records, the information will be coded in a way that no one will be able to identify whose records are being used.

If caregiver did not receive packet:

Would you like to be a part of this study? I'd be happy to mail you another packet.

Caregiver: Yes No

Caregiver: Yes –

Okay, let me verify your address. I have [potential participant's mailing address]. Is this correct?

Caregiver: Yes No

Caregiver: No –

What is your correct address then?

Caregiver: Gives address

Thank you! I will drop that in the mail today. This is the same address I will use to mail your gift-card once I receive your completed consent form and survey!

Caregiver: No –

Okay, thank you so much for taking the time to talk about this project with me. Please don't hesitate to call Big Brothers / Big Sisters if you have any other questions. Good bye.

If caregiver has packet:

Do you have any further questions about this study?

Caregiver Response

If you are interested in participating in this study, is there anything in your packet that is not clear?

Caregiver Response

Thank you so much for taking the time to talk about this project with me. Please don't hesitate to call me here at Big Brothers / Big Sisters if you have any other questions.

Thanks again,

Good bye

Please answer the following questions:

Child's Name: _____ Age: _____
Child's Race: ___ African American (Black) ___ Caucasian (White) ___ Hispanic ___ Asian ___ Other: _____

1. Please list times of incarceration of either or both parent(s) during the child's lifetime

1st time: _____
2nd time: _____
3rd time: _____
Other times: _____

2. Did the child live with his or her parent before the incarceration?

Yes No Don't know

3. Please list the schools and cities where this child was enrolled before and during the parent's incarceration:

At time of incarceration: _____
School Name, City, State
1st time: _____
2nd time: _____
3rd time: _____
Other times: _____

4. Please list the child's age or ages during the parent's incarceration.

1st time: _____
2nd time: _____
3rd time: _____
Other times: _____

5. What activities was this child involved in during the parents' incarceration? (Mentoring programs? Sports/dance? Scouts? Church?)

6. How often did the child move to a different household during the parent's incarceration?

1st time: _____
2nd time: _____
3rd time: _____
Other times: _____

7. How often did the child change caregivers during elementary and middle school?
_____ times

8. What was the relation of the caregiver(s) to the child?

9. What is the educational background of the caregiver(s)?

- ☐ Some high school
- ☐ High school diploma
- ☐ GED
- ☐ Some college
- ☐ Undergraduate degree
- ☐ Masters' degree
- ☐ Doctoral degree
- ☐ Other, please specify: _____

10. What other adults lived in the household during the parent's incarceration?

11. What is the average range of household income where this child lived during the parent's incarceration?

- ☐ Less than \$9,999
- ☐ Between \$10,000 - \$19,999
- ☐ Between \$20,000 - \$24,999
- ☐ Between \$25,000 - \$29,999
- ☐ Between \$30,000 - \$39,999
- ☐ Between \$40,000 - \$49,999
- ☐ Between \$50,000 - \$100,000
- ☐ More than \$100,000

12. Did the child receive any mental or behavioral counseling during the parent's incarceration?

Yes No Don't know

13. Did the child have adequate medical access during the parent's incarceration?

Yes No Don't know

Please answer the following questions:

Child's Name: _____ Age: _____

Child's Race: ☐ African American (Black) ☐ Caucasian (White) ☐ Hispanic ☐ Asian ☐ Other: _____

1. Please list the schools and cities where this child went to school for elementary and middle school:
2. What activities was this child involved in throughout elementary and middle school?
(Mentoring programs? Sports/dance? Scouts? Church?)
3. Did this child ever have a parent to go into prison or jail?

YesNoDon't know
4. Did this child live in a single-parent household during elementary or middle school?

YesNoDon't know
5. How often did the child move to a different household during elementary and middle school?
_____times
6. Did the child change caregivers at any point during elementary or middle school?

YesNoDon't know
7. What was the relation of the child's caregiver(s) to the child during elementary or middle school?
8. What is the educational background of the child's caregiver(s)?

☐ Some high school
☐ High school diploma
☐ GED
☐ Some college
☐ Undergraduate degree
☐ Masters' degree
☐ Doctoral degree
☐ Other, please specify: _____

9. What other adults lived in the household during elementary or middle school?

10. What is the average household income where this child lived during elementary and middle school?

- ☐ Less than \$9,999
- ☐ Between \$10,000 - \$19,999
- ☐ Between \$20,000 - \$24,999
- ☐ Between \$25,000 - \$29,999
- ☐ Between \$30,000 - \$39,999
- ☐ Between \$40,000 - \$49,999
- ☐ Between \$50,000 - \$100,000
- ☐ Greater than \$100,000

11. Did the child receive any mental or behavioral counseling during elementary or middle school?

Yes No Don't know

12. Did the child have adequate access to medical services during elementary and middle school?

Yes No Don't know

Parental Incarceration and School Performance Study:
Consent Form

This consent form will explain about being a part of this project to study the effects of a parent's incarceration on a child's performance at school. Please read this consent form and then decide whether to allow your child to be a part of this study.

The purpose of this research study is to see how having a parent in jail or in prison may affect a child's grades, test scores, and other school activities.

This study will collect data from the school records of two groups of children – 100 children with a parent in prison or jail and 100 children that do not have an incarcerated parent – in order to see if a child's progress at school changes while a parent is in prison or jail. With your consent given on this form, your child's school records will be used in this study. Once the data is gathered from your child's school record, a code will be used so that no one will be able to trace the data from school records back to your child in order to protect your child's privacy.

The amount of time needed to be a part of this study is simply the time needed to fill out this consent form and answer a 2-page survey.

The risk of this study is that some participants will have to share information about a parent's incarceration with the researcher. However, the status of a parent's incarceration will NOT be revealed to the schools or any other parties involved in the study. **No one, except Big Brothers / Big Sisters staff and the researcher, will know whether a child's parent is in prison or jail.**

The possible benefits of your child's participation could help children of inmates through out the state and nation. Study results could lead to more help for families of prisoners, more support at school, and policy changes to lessen the impact of a parent's incarceration on a child. Children in this study may not get a direct benefit, but each child involved will receive a backpack with school supplies. There is no cost for letting your child's school records be used in this study.

When a signed consent form is returned and the survey is answered, you and your child will be invited to a "Cool School Year Kick-Off" event where your child will receive a backpack with school supplies!

Consent forms and surveys will be kept in your child's files at Big Brothers / Big Sisters. School records will be gathered by the researcher so that no child can be traced through the study. Although your child's rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the ETSU IRB and persons involved in this study (Melissa Neal, MPH, and Big Brothers/Big Sisters) may access the study information. Your child's records will be kept private according to current laws.

You and your child's participation in this research experiment is voluntary. You may refuse to participate. There are no alternative procedures/treatments if you refuse to participate in this

study. If you have any questions, you may call Melissa Neal at 828/244-0739 or Big Brothers / Big Sisters of Middle Tennessee at 615/329-9191. You may call the Chairman of the Institutional Review Board at 423/439-6054 for any questions you may have about your child's rights as a research subject. If you have any questions or concerns about the research and want to talk to someone independent of the research team or you can't reach the study staff, you may call an IRB Coordinator at 423/439-6055 or 423/439-6002.

"I give permission for my child's school records to be used in this study. I understand that once information is taken from my child's record, the information will be coded so that no one will be able to trace this information back to my child."

CHILD'S FIRST NAME	MIDDLE NAME	LAST NAME
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CHILD'S DATE OF BIRTH

SIGNATURE OF CAREGIVER	DATE
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PRINTED NAME OF CAREGIVER	DATE
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SIGNATURE OF RESEARCHER	DATE
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Appendix B: Additional Tables

Chi-Square Analyses of Independent Variables on TCAP Subtest Scores

Table 6

Chi-Square Analyses of Independent Variables on TCAP Subtest Scores

TCAP Subtest	Independent Variable	Sample Size (n)	χ^2	Odds Ratio	<i>p</i>
0708 Reading and Language Arts	Activities	108	3.989	2.943	0.046
0708 Social Studies	SingleH	64	5.149	1.160	0.023
	CEdu	97	5.077	4.500	0.024
	Income	101	5.868	2.913	0.015
0506 Science	Medical	86	4.184	3.103	0.041
	Activities	85	4.161	0.136	0.041
0607Math	Counsel	103	4.084	0.426	0.043
	Income	98	5.537	3.480	0.019
0607 Science	SingleH	62	7.250	1.211	0.007
0607 Social Studies	House	100	6.586	0.152	0.010
	Medical	104	9.635	5.500	0.002
0304 Math	Income	53	9.066	6.000	0.003
	CEdu	50	8.976	15.429	0.003
	CEdu12	49	5.444	4.267	0.020
0304 Science	Medical	53	4.198	7.280	0.040
	House	53	10.098	0.054	0.001
0304 Social Studies	Medical	52	5.551	9.273	0.018
	PincAll	51	3.986	3.333	0.046
0203 Science	ComMobility	24	4.800	0.333	0.028
	House	37	6.116	0.067	0.013
0203 Math	CEdu	59	7.193	10.071	0.007
	CRelation	54	8.534	0.064	0.003
0203 Language	Events	40	4.675	6.000	0.031

Table 6 (continued)

TCAP Subtest	Independent Variable	Sample Size (n)	χ^2	Odds Ratio	<i>p</i>
0203 Reading	ComMobility	43	6.426	0.514	0.011
	Events	40	4.675	6.000	0.031
0203 Social Studies	ComMobility	23	4.485	0.350	0.034
0506 Reading	AgeOf	36	4.410	8.636	0.036

t-tests of Summed TCAP Scores within Subtests by Experience of Incarceration

Table 7

t-tests of Summed TCAP Scores within Subtests by Experience of Incarceration

Test Subject Area	Parental Incarceration Status	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Math	Yes	44	1420	113	-1.970	0.055
	No	20	1472	91		
Reading and Language Arts	Yes	44	1435	114	-1.724	0.092
	No	20	1485	105		
Science	Yes	44	548	43	-1.634	0.110
	No	20	566	39		
Social Sciences	Yes	42	553	46	-0.456	0.651
	No	20	559	50		

2 x 2 Tables of Independent Variables by Experience of Parental Incarceration

Table 8

2 x 2 Tables of Independent Variables by Experience of Parental Incarceration

Variables	N	χ^2 ^a	Fisher's Exact Test ^a	Odds Ratio ^a
1 – 2	157	0.252	0.701	1.209
1 – 3	167	1.915	0.195	0.511
1 – 4	74	-	-	-
1 – 5	167	0.151	0.679	0.851
1 – 6	163	0.813	0.489	1.564
1 – 7	167	29.91	0.000*	0.108
1 – 8	141	4.331	0.038	- ^b
1 – 9	155	0.456	0.564	1.455
1 – 10	165	3.387	0.079	0.506
1 – 11	167	1.233	0.267	0.667
1 – 12	89	1.332	0.374	3.467
1 – 13	166	0.553	0.499	0.778
1 – 14	163	0.74	0.446	0.66
1 – 15	150	1.11	0.365	1.459
1 – 16	116	-	-	-
1 – 17	75	-	-	-
1 – 18	148	11.319	0.001*	3.683

^aDashes denote that entire sample experienced parental incarceration. ^bOne cell contained a null value.

* $p < 0.01$

Notes: 1. Parental Incarceration, 2. Income, 3. Race/ethnicity, 4. Living with parent prior to incarceration, 5. School mobility, 6. Activities, 7. Number of caregivers, 8. Relation to caregiver, 9. Caregiver education level, 10. Counseling services received, 11. Access to medical care, 12. Living in a single-parent household, 13. Gender, 14. Number of household moves, 15. Number of adults living in the household, 16. Number of parent incarcerations, 17. Time of life of parental incarceration, 18. Caregiver education within high school levels

t-tests of Independent Variables by Experimental (E) or Comparison (C) Grouping

Independent Variable	Label	Group	N	Mean	S.D.	t-score	<i>p</i>
Annual Household Income	Income	E	76	0.25	0.44	-0.328	0.743
		C	88	0.27	0.45		
Activities	Activities	E	77	0.81	0.39	-0.960	0.339
		C	93	0.35	0.35		
Number of Primary Caregivers	Care	E	77	0.74	0.44	7.979	0.000*
		C	96	0.22	0.42		
Relation of child to Caregiver	CRelation	E	73	0.88	0.33	-1.841	0.068
		C	74	0.96	0.20		
Primary Caregiver Education	CEdu	E	72	0.07	0.26	-0.906	0.366
		C	90	0.11	0.32		
Counseling Services Received	Counsel	E	76	0.46	0.52	2.460	0.015*
		C	96	0.28	0.45		
Access to Medical Care	Medical	E	78	0.77	0.46	1.093	0.276
		C	95	0.69	0.46		
Race/Ethnicity	Race	E	78	0.23	0.42	1.439	0.152
		C	96	0.15	0.35		
Number of Other Adults in Household	Adults	E	67	0.46	0.50	1.594	0.113
		C	89	0.34	0.48		
Gender	Gender	E	78	0.54	0.50	-0.671	0.503
		C	95	0.59	0.49		
Number of Household Moves	House	E	76	0.95	0.22	2.560	0.011*
		C	94	0.82	0.39		
School Mobility	School Mobility	E	78	0.86	0.35	1.476	0.142
		C	96	0.77	0.42		
Parental Incarceration	PincAll	E	76	0.00	0.00	-9.785	0.000*
		C	91	0.56	0.50		
Events of Parental Incarceration	Events	E	77	0.48	0.50	6.031	0.000*
		C	40	0.00	0.00		
Age During Parental Incarceration	AgeOf	E	76	0.08	0.27	n/a	n/a
		C	0	0	.		

**p* < 0.05.

Linear Regression of Conventional Correlates in the Public Health Setting

Table 10

Linear Regression of Conventional Correlates in the Public Health Setting

Year	Independent Variables	Beta Coefficient	R ²	Method	p
2007-08			0.330	Enter	0.004
	Race	0.053			0.703
	Gender	(-)0.044			0.753
	Income	0.345			0.026*
	School Mobility	(-)0.287			0.025*
	Caregiver Education	0.192			0.148
	Parental Incarceration	(-)0.157			0.216
2006-07			0.343	Enter	0.004
	Race	0.042			0.744
	Gender	0.030			0.827
	Income	0.302			0.029*
	School Mobility	(-)0.400			0.004*
	Caregiver Education	0.371			0.007*
	Parental Incarceration	(-)0.055			0.676
2005-06			0.314	Enter	0.047
	Race	0.125			0.420
	Gender	(-)0.162			0.378
	Income	0.153			0.414
	School Mobility	(-)0.240			0.144
	Caregiver Education	0.441			0.011*
	Parental Incarceration	(-)0.048			0.765

*p < 0.05.

VITA

MELISSA F. NEAL, MPA

- Education:
- Elon University, Elon, North Carolina
Bachelor of Science, *cum laude*. Major: Biology; Minor: Political Science
May, 2004.
- East Tennessee State University, Johnson City, Tennessee
Master of Public Health, concentration: Community Health.
May, 2006.
- East Tennessee State University, Johnson City, Tennessee
Doctorate of Public Health, concentration: Community Health.
December, 2009
- Professional Experience:
- Senior Analyst
Planning and Learning Technologies, Inc., Arlington, Virginia
September 2009 – present
- Co-Founder and Volunteer Operations Director
Families Free, Inc., Johnson City, Tennessee
June 2007 – present
- Piano Instructor
Trinity Arts Center, Johnson City, Tennessee
August 2007 – February 2009
- Instructor and Research Assistant
East Tennessee State University, Johnson City, Tennessee
August 2006 – December 2007
- Honors and Awards:
- Beta Beta Beta Honor Society (Biology)
Pi Sigma Alpha Honor Society (Political Science)
Sigma Delta Pi Honor Society (Spanish)
Delta Omega Honor Society (Public Health)
Outstanding Doctoral Student in Community Health Award (May, 2009)